

N A T U R A L R E S O U R C E S

Publications of the Washington Division of Geology and Earth Resources

April 2001



WASHINGTON STATE DEPARTMENT OF
Natural Resources
Doug Sutherland - Commissioner of Public Lands

■ CONTENTS ■

Annual Reports	2
Bulletins	2
Geologic Maps	5
Topographic Maps.	7
Reports of Investigations	7
Information Circulars	8
Open File Reports	11
Miscellaneous Publications	21
Author Index.	22
Subject Index	24
<i>Washington Geology Article Index.</i>	32

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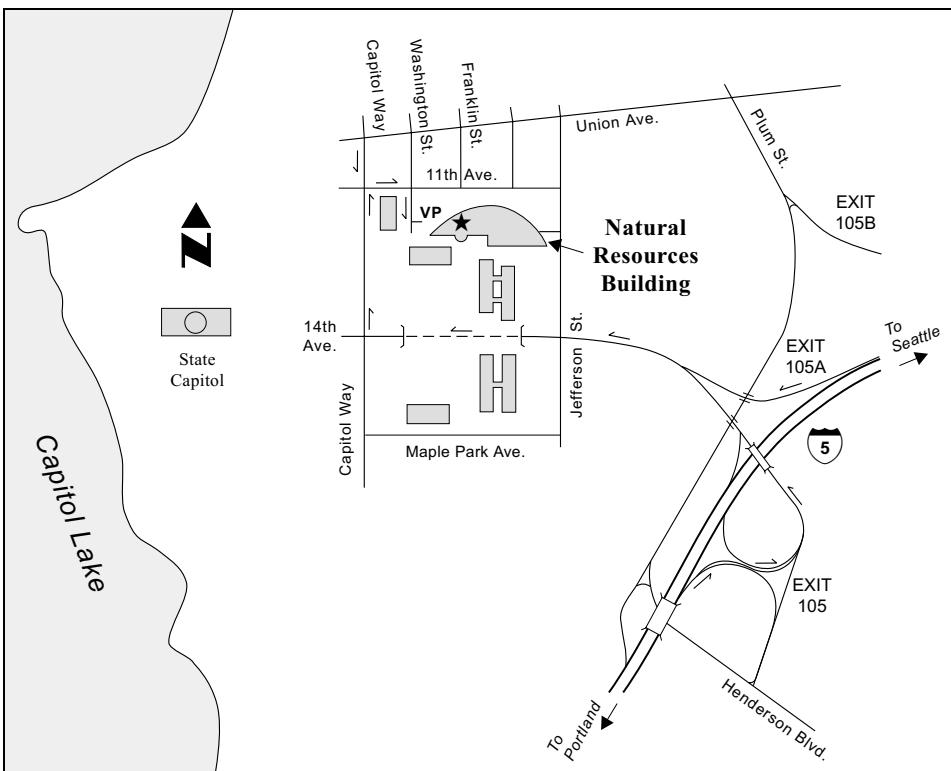
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■ ANNUAL REPORTS ■

These reports are available *for inspection only* in the library of the Division of Geology and Earth Resources in Olympia. (See map, p. 1, for office location.)

Washington State Geologist

Mines and minerals of Washington—Annual report of George A. Bethune, first State Geologist, 1890. 1891. 122 p.

Mines and minerals of Washington—Second annual report of George A. Bethune, State Geologist. 1892. 186 p.

Washington Mining Bureau

First annual report of the Mining Bureau of the State of Washington, from April 1, 1891 to April 1, 1892. 1892. 46 p., 5 pl.

Washington Geological Survey

Annual Reports

Annual report for 1901. 1902. 344 p.

The chapters were also published separately:

Part I. Creation of a state geological survey, and, An outline of the geology of Washington, by Henry Landes. 1902. 33 p.

Part II. The metalliferous resources of Washington, except iron, by Henry Landes, W. S. Thyng, D. A. Lyon, and Milnor Roberts. 1902. 123 p.

Part III. The non-metalliferous resources of Washington, except coal, by Henry Landes. 1902. 55 p.

Part IV. The iron ores of Washington, by Solon Shedd, and, The coal deposits of Washington, by Henry Landes. 1902. 65 p.

Part V. The water resources of Washington—Potable and mineral water, by H. G. Byers; Artesian water, by C. A. Ruddy; and, Water power, by R. E. Heine. 1902. 36 p.

Part VI. Bibliography of the literature referring to the geology of Washington, by Ralph Arnold. 1902. 16 p.

Annual report for 1902. 1903. 277 p. (Contains: Part I. The building and ornamental stones of Washington, by Solon Shedd; Part II. Coal deposits of Washington, by Henry Landes and C. A. Ruddy.)

Biennial Reports

Board of Geological Survey—1901/1903 through 1919/1921.

Department of Conservation and Development, Division of Geology—1st, 1921/1922, through 12th, 1942/1944.

Department of Conservation and Development, Division of Mines and Mining—1st, 1935/1936, through 5th, 1942/1944.

Department of Conservation and Development, Division of Mines and Geology—1944/1946, through 1964/1966.

■ BULLETINS ■

No.	Washington Geological Survey	Price
1.	Geology and ore deposits of Republic mining district, by J. B. Umpleby. 1910. 66 p., 13 pl., 5 figs.	Out of print
2.	The road materials of Washington, by Henry Landes. 1911. 204 p., 17 pl., 51 figs.	Out of print
3.	The coal fields of King County, by G. W. Evans. 1912. 247 p., 23 pl., 59 figs.	Out of print
4.	Cement materials and industry in Washington, by Solon Shedd. 1913. 268 p., 21 pl., 10 figs.	Out of print
5.	Part I. Geology and ore deposits of the Myers Creek mining district; Part II. Geology and ore deposits of the Oroville-Nighthawk mining district, by J. B. Umpleby. 1911. 113 p., 3 pl., 5 figs.	Out of print
6.	Geology and ore deposits of the Blewett mining district, by C. E. Weaver. 1911. 104 p., 10 pl., 1 fig.	Out of print
7.	Geology and ore deposits of the Index mining district, by C. E. Weaver. 1912. 96 p., 7 pl.	Out of print
8.	Glaciation of the Puget Sound region, by J. H. Bretz. 1913. 244 p., 24 pl., 27 figs.	Out of print
9.	The coal fields of Kittitas County, by E. J. Saunders. 1914. 204 p., 38 pl., 52 figs.	Out of print
10.	The coal fields of Pierce County, by Joseph Daniels. 1914. 146 p., 30 pl., 23 figs.	Out of print
11.	The mineral resources of Washington, with statistics for 1912, by Henry Landes. 1914. 53 p., 1 pl.	Out of print
12.	Bibliography of Washington geology and geography, by Gretchen O'Donnell. 1913. 63 p.	Out of print
13.	The Tertiary formations of western Washington, by C. E. Weaver. 1916. 327 p., 30 pl.	Out of print
14.	A preliminary report on the Quincy Valley irrigation project, by Henry Landes, A. W. Mangum, H. K. Benson, E. J. Saunders, and Joseph Jacobs. 1912. 49 p., 7 pl.	Out of print
15.	A preliminary report on the Tertiary paleontology of western Washington, by C. E. Weaver. 1912. 80 p., 16 pl.	Out of print
16.	Geology and ore deposits of the Covada mining district, by C. E. Weaver. 1913. 87 p., 5 pl., 3 figs.	Out of print
17.	A geographic dictionary of Washington, by Henry Landes. 1917. 346 p., 10 pl.	Out of print
18.	The country about Camp Lewis, by M. M. Leighton. 1918. 105 p., 12 pl., 6 figs.	Out of print
19.	The coal fields of southwestern Washington, by H. E. Culver. 1919. 155 p., 24 pl., 12 figs.	Out of print
20.	The mineral resources of Stevens County, by C. E. Weaver. 1920. 350 p., 20 pl., 14 figs.	Out of print
21.	The mineral resources of Washington, with statistics for 1919, by E. N. Patty and S. L. Glover. 1921. 155 p., 13 pl., 3 figs.	Out of print
22.	The road building sands and gravels of Washington, by M. M. Leighton. 1919. 307 p., 9 pl., 36 figs.	Out of print

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No.	Price	No.	Price
23. The metal mines of Washington, by E. N. Patty. 1921. 366 p., 36 pl., 27 figs.	Out of print	Part II. Metallic minerals, by M. T. Huntting. 1956. 2 v.	Out of print
25. The magnesite deposits of Washington, their occurrence and technology, by G. E. Whitwell and E. N. Patty. 1921. 194 p., 13 pl., 5 figs.	Out of print	Volume 1 – text. 428 p. Volume 2 – maps. 67 p., 27 pl.	
Division of Geology		38. The place of steam-electric generating stations in the orderly program of electric power development in the Pacific Northwest, by H. H. Houston. 1950. 117 p., 1 pl., 25 figs.	Out of print
24. Clays and shales of Washington, by S. L. Glover. 1941. 368 p., 14 pl., 6 figs.	Out of print	39. Antimony occurrences of Washington, by C. P. Purdy, Jr. 1951. 186 p., 14 figs.	Out of print
26. Underground water supply of the region about White Bluffs and Hanford, by O. P. Jenkins. 1922. 41 p., 3 pl., 1 fig.	Out of print	40. Geology of the Bead Lake district, Pend Oreille County, Washington, by M. C. Schroeder. 1952. 57 p., 1 pl., 6 figs.	Out of print
27. Iron ores, fuels, and fluxes of Washington, by Solon Shedd, O. P. Jenkins, and H. H. Cooper. 1922. 160 p., 1 pl., 11 figs.	Out of print	41. An outline of mining laws of the State of Washington [includes supplement], compiled and annotated by M. H. Van Nuys. 1953. 142 p.	Out of print
28. Geological investigation of the coal fields of western Whatcom County, Washington, by O. P. Jenkins. 1923. 135 p., 4 pl., 2 figs.	Out of print	41S. An outline of mining laws of the State of Washington, compiled and annotated by M. H. Van Nuys. 1956. 26 p.	Out of print
29. Geological investigation of the coal fields of Skagit County, Washington, by O. P. Jenkins. 1924. 63 p., 7 pl., 5 figs.	Out of print	42. Gold in Washington, by M. T. Huntting. 1955. 158 p., 2 figs.	Out of print
30. The mineral resources of Washington, with statistics for 1922, by Solon Shedd, with an article on coal and coke by G. W. Evans. 1924. 224 p., 3 figs.	Out of print	43. Eocene stratigraphy of the lower Cowlitz River–eastern Willapa Hills area, southwestern Washington, by D. A. Henriksen. 1956. 122 p., 2 pl., 49 figs.	\$ 1.39 .11 \$ 1.50
31. Lead deposits of Pend Oreille and Stevens Counties, Washington, by O. P. Jenkins. 1924. 153 p., 3 pl., 15 figs.	Out of print	44. Peat resources of Washington, by G. B. Rigg. 1958. 272 p., 1 pl., 263 figs.	Out of print
32. Geology of Washington, by H. E. Culver. (Part I: General features of Washington geology; to accompany the preliminary geologic map, 1936). 1936. 70 p.	Out of print	45. Washington's channeled scabland, by J. H. Bretz. 1959. 57 p., 4 pl., 36 figs.	Out of print
33. Nonmetallic mineral resources of Washington, with statistics for 1933, by S. L. Glover. 1936. 135 p.	Out of print	46. Bibliography and index of the geology and mineral resources of Washington, 1937–1956, by W. H. Reichert. 1960. 721 p.	\$ 1.85 .15 \$ 2.00
34. Tungsten resources of Washington, by H. E. Culver and W. A. Broughton. 1945. 89 p., 23 pl., 9 figs.	Out of print	47. Coal reserves of Washington, by H. M. Beikman, H. D. Gower, and T. A. M. Dana. 1961. 115 p., 62 figs. [Reprinted with 15-p. addendum by H. W. Schasse, T. J. Walsh, and W. M. Phillips. 1984.]	\$ 3.24 .26 \$ 3.50
35. Bibliography and index of geology and mineral resources of Washington, 1814–1936, by W. A. G. Bennett. 1939. 140 p.	Out of print	48. High-calcium limestones of eastern Washington, by J. W. Mills. 1962. 268 p., 7 pl., 64 figs.	Out of print
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37. Inventory of Washington minerals: Part I. Nonmetallic minerals, by G. M. Valentine. 1949. 113 p., 39 pl. Part I. (2nd edition) Nonmetallic minerals, by G. M. Valentine, revised by M. T. Huntting. 1960. 2 v. Volume 1 – text. 175 p. Volume 2 – maps. 39 pl.	Out of print \$ 2.78 .22 \$ 3.00	51. Barite in Washington, by W. S. Moen. 1964. 112 p., 2 pl., 37 figs.	\$.93 .07 \$ 1.00
		52. Limestone resources of western Washington, by W. R. Danner. 1966. 474 p., 218 figs.	\$ 4.17 .33 \$ 4.50
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		54. Geology and mineral resources of the Kelso–Cathlamet area, Cowlitz and Wahkiakum Counties, Washington, by V. E. Livingston, Jr. 1966. 110 p., 23 figs.	Out of Print

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55. Building stone of Washington, by W. S. Moen. 1967. 85 p., 20 figs.	\$.70 .05 \$.75	69. Silver occurrences of Washington, by W. S. Moen. 1976. 188 p., 36 figs. [Reprinted 1982.]	\$ 3.71 .29 \$ 4.00
56. Geology of the Wynoochee Valley quadrangle, Grays Harbor County, Washington, by W. W. Rau. 1967. 51 p., 8 figs.	\$ 1.39 .11 \$ 1.50	70. Zinc and lead ore deposits in carbonate rocks, Stevens County, Washington, by J. W. Mills. 1977. 171 p., 70 figs.	\$ 2.78 .22 \$ 3.00
57. Mines and mineral deposits of Whatcom County, Washington, by W. S. Moen. 1969. 134 p., 14 pl., 44 figs.	Out of print	71. Geology of parts of Grant, Adams, and Franklin Counties, east-central Washington, by M. J. Grolier and J. W. Bingham. 1978. 91 p., 33 figs.	Out of print
58. Chemical and physical controls for base metal deposition in the Cascade Range of Washington, by A. R. Grant. 1969. 107 p., 33 figs.	Out of print	72. Washington coastal geology between the Hoh and Quillayute Rivers, by W. W. Rau. 1980. 57 p., 74 figs.	\$ 4.63 .37 \$ 5.00
59. Bibliography and index of the geology and mineral resources of Washington, 1957–1962, by W. H. Reichert. 1969. 375 p.	Out of print	73. Myers Creek and Wauconda mining districts of northeastern Okanogan County, Washington, by W. S. Moen. 1980. 96 p., 6 pl., 36 figs.	Out of print
60. Cenozoic volcanism in the Cascade Mountains of southern Washington, by W. S. Wise. 1970. 45 p., 1 pl., 14 figs.	Out of print	74. Reconnaissance geochemical survey of gully and stream sediments, and geologic summary, in part of the Okanogan Range, Okanogan County, Washington, by C. D. Rinehart. 1981. 24 p., 3 pl., 4 figs.	\$ 1.85 .15 \$ 2.00
61. Lead-zinc deposits in the Kootenay arc, northeastern Washington and adjacent British Columbia, edited by A. E. Weissenborn, F. C. Armstrong, and J. T. Fyles. 1970. 123 p., 42 figs.	\$ 1.85 .15 \$ 2.00	75. Geology of the Wenatchee and Monitor quadrangles, Chelan and Douglas Counties, Washington, by R. L. Gresens. 1983. 75 p., 3 pl., scale 1:24,000.	\$ 4.63 .37 \$ 5.00
62. Foraminifera, stratigraphy, and paleoecology of the Quinault Formation, Point Grenville–Raft River coastal area, Washington, by W. W. Rau. 1970. 41 p., 3 pl., 8 figs.	\$ 2.78 .22 \$ 3.00	76. Bibliography and index of the geology and mineral resources of Washington, 1963–1980, compiled by C. J. Manson and Debbie Burnett. 1983. 398 p.	\$ 4.40 .35 \$ 4.75
63. Geology and mineral resources of King County, Washington, by V. E. Livingston, Jr. 1971. 200 p., 6 pl., 103 figs.	Out of print	77. Selected papers on the geology of Washington, edited by J. E. Schuster. 1987. 406 p.	\$14.83 1.17 \$16.00
64. Geology and mineral deposits of the Loomis quadrangle, Okanogan County, Washington, by C. D. Rinehart and K. F. Fox, Jr. 1972. 124 p., 2 pl., 32 figs.	Out of print	78. Engineering geology in Washington, edited by R. W. Galster, chairman. 1989. [2 v.], 1,234 p.	\$27.80 .20 \$30.00
65. Distribution of copper and other metals in gully sediments of part of Okanogan County, Washington, by K. F. Fox, Jr., and C. D. Rinehart. 1972. 38 p., 3 pl., 10 figs.	\$ 1.85 .15 \$ 2.00	79. Bibliography and index of the geology and mineral resources of Washington, 1981–1985, compiled by C. J. Manson. 1990. 484 p.	\$11.59 .91 \$12.50
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66. Geology of the Washington coast between Point Grenville and the Hoh River, by W. W. Rau. 1973. 58 p., 72 figs.	\$ 2.78 .22 \$ 3.00	80. Regional Geology of Washington State, Raymond Lasmanis and E. S. Cheney, convenors. 1994. 227 p., 136 figs., 18 tables.	\$ 8.80 .70 \$ 9.50
67. Mining laws of the State of Washington, by J. L. Neff and R. L. Magnuson. 1974. 109 p., 9 figs.	Out of print	81. Bibliography and index of the geology and mineral resources of Washington, 1986–1990, by Connie J. Manson. 1996. 476 p.	\$14.72 1.28 \$16.00
68. Geology of the Methow Valley, Okanogan County, Washington, by J. D. Barksdale. 1975. 72 p., 1 pl., 17 figs.	Out of print		

■ GEOLOGIC MAPS ■

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	Division of Geology			
	Preliminary geologic map of Washington, compiled from published and unpublished sources, edited by G. W. Stose. 1936. 1 sheet, scale 1:500,000. [Accompanied by Bulletin 32, which is out of print.]	Out of print	GM-12. Thickness of unconsolidated sediments, Puget Lowland, Washington, by J. B. Hall and K. L. Othberg. 1974. 3 p., 1 pl., scale 1:250,000.	Out of print
	Division of Mines and Geology			
	Geologic map of Washington, by M. T. Huntington, W. A. G. Bennett, V. E. Livingston, Jr., and W. S. Moen. 1961. 2 sheets, scale 1:500,000. [Ozalid copies available at \$2.78 + .22 (tax) = \$3.00 each.]	Out of print	GM-13. Geologic map of the Destruction Island and Taholah quadrangles, Washington, by W. W. Rau. 1975. 1 sheet, scale 1:62,500.	Out of print
GM-1.	Preliminary geologic map of the Hobart and Maple Valley quadrangles, King County, Washington, by J. D. Vine. 1962. 1 sheet, scale 1:24,000.	\$.70 _____.05 \$.75	GM-14. Preliminary surficial geologic map of the Edmonds East and Edmonds West quadrangles, Snohomish and King Counties, Washington, by Mackey Smith. 1975. 1 sheet, scale 1:24,000.	Out of print
GM-2.	Preliminary geologic map of the Cumberland quadrangle, King County, Washington, by H. D. Gower and A. A. Wanek. 1963. 1 sheet, scale 1:24,000.	\$.93 _____.07 \$ 1.00	GM-15. Slope stability map of Thurston County, Washington, by E. R. Artim. 1976. 1 sheet, scale 1:125,000.	\$.93 _____.07 \$ 1.00
GM-3.	Geology of the Simeoce Mountains volcanic area, Washington, by R. A. Sheppard. 1967. 1 sheet, scale 1:125,000.	\$.93 _____.07 \$ 1.00	GM-16. Relative ground settlement hazards of Thurston County, Washington, by E. R. Artim. 1976. 1 sheet, scale 1:125,000.	\$.93 _____.07 \$ 1.00
GM-4.	Geology of the Grays River quadrangle, Wahkiakum and Pacific Counties, Washington, by E. W. Wolfe and E. H. McKee. 1968. 6 p., 1 pl., scale 1:62,500.	\$.93 _____.07 \$ 1.00	GM-17. Relative potential for differential settlement, Gig Harbor Peninsula, Pierce County, Washington, by Mackey Smith. 1976. 1 sheet, scale 1:31,250.	\$.93 _____.07 \$ 1.00
GM-5.	Preliminary geologic map of the Chewelah Mountain quadrangle, Stevens County, Washington, by L. D. Clark and F. K. Miller. 1968. 6 p., 2 pl., scale 1:62,500.	\$.93 _____.07 \$ 1.00	GM-18. Relative slope stability of the Gig Harbor Peninsula, Pierce County, Washington, by Mackey Smith. 1976. 1 sheet, scale 1:31,250.	\$.93 _____.07 \$ 1.00
GM-6.	Preliminary geologic map of the Loon Lake quadrangle, Stevens and Spokane Counties, Washington, by F. K. Miller. 1969. 7 p., 1 pl., scale 1:62,500.	\$.93 _____.07 \$ 1.00	GM-19. Geologic factors affecting waste disposal practices, Gig Harbor Peninsula, Pierce County, Washington, by Mackey Smith. 1976. 1 sheet, scale 1:31,250.	\$.93 _____.07 \$ 1.00
	Division of Geology and Earth Resources			
GM-7.	Preliminary geologic map of the Newport number 1 quadrangle, Pend Oreille County, Washington, and Bonner County, Idaho, by F. K. Miller. 1974. 7 p., 1 pl., scale 1:62,500.	Out of print	GM-20. Preliminary surficial geologic map of the Mukilteo and Everett quadrangles, Snohomish County, Washington, by Mackey Smith. 1976. 1 sheet, scale 1:31,250.	\$.93 _____.07 \$ 1.00
GM-8.	Preliminary geologic map of the Newport number 2 quadrangle, Pend Oreille and Stevens Counties, Washington, by F. K. Miller. 1974. 6 p., 1 pl., scale 1:62,500.	Out of print	GM-21. Mineral resources of the southern Hood Canal area, Washington, by Mackey Smith and R. J. Carson. 1976. 1 sheet, scale 1:62,500.	\$.93 _____.07 \$ 1.00
GM-9.	Preliminary geologic map of the Newport number 3 quadrangle, Pend Oreille, Stevens, and Spokane Counties, Washington, by F. K. Miller. 1974. 7 p., 1 pl., scale 1:62,500.	Out of print	GM-22. Mineral resource maps of Washington, by W. S. Moen. 1978. 4 p., 4 pl., scale 1:1,000,000 [Reprinted 1986.]	\$ 1.85 _____.15 \$ 2.00
GM-10.	Preliminary geologic map of the Newport number 4 quadrangle, Spokane and Pend Oreille Counties, Washington, and Bonner County, Idaho, by F. K. Miller. 1974. 6 p., 1 pl., scale 1:62,500.	Out of print	GM-23. Geologic map of the Marblemount quadrangle, Washington, by Peter Misch. 1979. 1 sheet, scale 1:48,000.	\$ 3.71 _____.29 \$ 4.00
GM-11.	Complete Bouguer gravity anomaly map of Washington, by W. E. Bonini, D. W. Hughes, and Z. F. Daneš. 1974. 1 sheet, scale 1:500,000.	\$ 2.32 _____.18 \$ 2.50	GM-24. Geologic map in the vicinity of the lower Bogachiel and Hoh River valleys and the Washington coast, by W. W. Rau. 1979. 1 sheet, scale 1:62,500.	\$ 4.17 _____.33 \$ 4.50
			GM-25. Geothermal resources of Washington, compiled by M. A. Korosec, K. L. Kaler, J. E. Schuster, R. G. Bloomquist, S. J. Simpson, and D. D. Blackwell. 1981. 1 sheet, scale 1:500,000.	Free
			GM-26. Geology of the Pullman, Moscow West, Colton, and Uniontown 7½-minute quadrangles, Washington and Idaho, by P. R. Hooper and G. D. Webster. 1982. 1 sheet, scale 1:62,500.	Out of print
			GM-27. Complete Bouguer gravity anomaly map, Cascade Mountains, Washington, by Z. F. Daneš and W. M. Phillips. 1983. 2 sheets, scale 1:250,000.	\$ 3.01 _____.24 \$ 3.25

■ GEOLOGIC MAPS ■

(Continued)

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GM-28. Geologic map of the Ellensburg quadrangle, Washington, by R. D. Bentley and N. P. Campbell. 1983. 1 sheet, scale 1:62,500.		Out of print	GM-40. Geologic map of southeast Asotin County, Washington, by S. P. Reidel, P. R. Hooper, G. D. Webster, and V. E. Camp. 1992. 22 p., 1 pl., scale 1:48,000.	\$.93 .07 \$ 1.00
GM-29. Geologic map of the Yakima quadrangle, Washington, by R. D. Bentley and N. P. Campbell. 1983. 1 sheet, scale 1:62,500.		Out of print	GM-41. Liquefaction susceptibility for the Des Moines and Renton 7.5-minute quadrangles, Washington, by S. P. Palmer, H. W. Schasse, and D. K. Norman. 1994. 2 pl., scale 1:24,000.	\$ 3.71 .29 \$ 4.00
GM-30. Availability of Federal land for mineral exploration and development in the State of Washington, by D. P. Banister, D. J. Barnes, and W. D. Longwill. 1984. 17 p., 4 pl., scale 1:500,000.		Out of print	GM-42. Relative earthquake hazard map for the Vancouver, Washington, urban region, by M. A. Mabey, I. P. Madin, and S. P. Palmer. 1994. 2 pl., scale 1:24,000.	Free
GM-31. Geologic map of the Clarkston 15-minute quadrangle, Washington and Idaho, by P. R. Hooper, G. D. Webster, and V. E. Camp. 1985. 11 p., 1 pl., scale 1:48,000.		Out of print	GM-43. Liquefaction susceptibility for the Auburn and Poverty Bay 7.5-minute quadrangles, Washington, by S. P. Palmer, T. J. Walsh, R. L. Logan, and W. G. Gerstel. 1995. 15 p., 2 pl., scale 1:24,000.	\$ 4.63 .37 \$ 5.00
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GM-33. Geologic map of the Humptulips quadrangle and adjacent areas, Grays Harbor County, Washington, by W. W. Rau. 1986. 1 sheet, scale 1:62,500.	\$ 2.76 .24 \$ 3.00		GM-45. Geologic map of Washington—Southeast quadrant, by J. E. Schuster, C. W. Gulick, S. P. Reidel, K. R. Fecht, and Stephanie Zurenko. 1997. 20 p., 1 pl., scale 1:250,000, and accompanying explanatory sheet with bedrock geology and tectonic map at 1:625,000.	
GM-34. Geologic map of Washington—Southwest quadrant, by T. J. Walsh, M. A. Korosec, W. M. Phillips, R. L. Logan, and H. W. Schasse. 1987. 28 p., 1 pl., scale 1:250,000, and accompanying explanatory sheet.	Rolled \$ 7.40 .60 \$ 8.00	Folded (in envelope) \$ 5.55 .45 \$ 6.00	Rolled \$ 9.20 .80 \$ 10.00	Folded (in envelope) \$ 7.36 .64 \$ 8.00
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GM-37. Geologic map of the Logy Creek 15-minute quadrangle, Washington, by R. D. Bentley, N. P. Campbell, and J. E. Powell. 1988. 1 sheet, scale 1:48,000.	\$ 1.85 .15 \$ 2.00		GM-48. In progress.	
GM-38. Geologic map of the Saddle Mountains, Washington, by S. P. Reidel. 1988. 28 p., 5 pl., scale 1:48,000.	\$ 6.02 .48 \$ 6.50		GM-49. Tsunami hazard map of the southern Washington coast—Modeled tsunami inundation from a Cascadia subduction zone earthquake, by T. J. Walsh, C. G. Caruthers, A. C. Heinrich, E. P. Myers III, A. M. Baptista, G. B. Erdakos, and R. A. Kamphaus. 2000. 12 p., 1 pl., scale 1:100,000.	\$ 3.71 .29 \$ 4.00
GM-39. Geologic map of Washington—Northeast quadrant, by K. L. Stoffel, N. L. Joseph, S. Z. Waggoner, C. W. Gulick, M. A. Korosec, and B. B. Bunning. 1991. 36 p., 1 pl., scale 1:250,000, and two accompanying explanatory sheets, including a bedrock geologic and tectonic map at 1:625,000 scale.	Rolled \$ 9.27 .73 \$10.00	Folded (in envelope) \$ 7.41 .59 \$ 8.00		

Also available: Colored page-size (8½ x 14 in.) geologic map of Washington, compiled by J. E. Schuster. 1992. Scale 1:2,250,000 (or 1 in. = approx. 37 mi). Free.

■ TOPOGRAPHIC MAPS ■

No.		Price	No.		Price
TM-1.	Topographic map, State of Washington—Southwest quadrant. 1987, prepared by Division of Geology and Earth Resources. 1 sheet, scale 1:250,000.	See right	TM-3.	Topographic map, State of Washington—Southeast quadrant. 1997, prepared by Division of Geology and Earth Resources. 1 sheet, scale 1:250,000.	See below
TM-2.	Topographic map, State of Washington—Northeast quadrant. 1991, prepared by Division of Geology and Earth Resources. 1 sheet, scale 1:250,000.	See right	Each:	Rolled \$ 3.26 .24 \$ 3.50	Folded (in envelope) \$ 1.85 .15 \$ 2.00

■ REPORTS OF INVESTIGATIONS ■

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2.	Washington iron ores, a summary report, by S. L. Glover. 1942. 23 p.	Out of print	9.	Inventory of mineral properties in Chelan County, Washington, by M. T. Hunting. 1943. 63 p., 1 pl.	Out of print
3.	Mineral resources of the Wenatchee-Ellensburg-Yakima region, by S. L. Glover. 1942. 13 p.	Out of print	10.	The Blewett iron deposit, Chelan County, Washington (with preliminary tonnage estimates), by W. A. Broughton. 1943. 17 p., 1 pl., 2 figs.	Out of print
4.	Coal and coal mining in Washington, by S. H. Green. 1943. 41 p., 3 figs.	Out of print	11.	Stratigraphic aspects of the Blewett-Cle Elum iron ore zone, Chelan and Kittitas Counties, Washington, by R. L. Luper. 1944. 63 p., 2 pl.	Out of print
4R.	Coal and coal mining in Washington, by S. H. Green. 1947. 41 p., 3 figs. [Revision of RI 4.]	Out of print	12.	Economic aspects of the Blewett-Cle Elum iron ore zone, Chelan and Kittitas Counties, Washington, by W. A. Broughton. 1944. 42 p., 7 pl., 14 figs.	Out of print
5.	Memorandum report on iron ores of the Cle Elum district, Washington, by Carl Zappfe. 1944. 27 p., 2 pl., 5 figs.	Out of print	13.	Dolomite resources of Washington, by W. A. G. Bennett. 1944. 35 p., 12 pl., 2 figs.	Out of print
6.	Relation of geology to mineralization in the Morton cinnabar district, Lewis County, Washington, by J. H. Mackin. 1944. 47 p., 2 pl., 13 figs.	Out of print	14.	Some magnetite deposits of Stevens and Okanogan Counties, Washington, by W. A. Broughton. 1945. 24 p., 5 pl., 1 fig.	Out of print
7.	Manganese deposits of the Olympic Peninsula, Washington, by S. H. Green. 1945. 45 p., 5 pl., 1 fig.	Out of print		Division of Geology	
	Division of Geology				
1.	Abstract of the report [by Solon Shedd] on the geology and resources of the Pasco and Prosser quadrangles, by H. E. Culver. 1926. 7 p., 1 pl.	Out of print	15.	Pumice and pumicite occurrences of Washington, by Ward Carithers. 1946. 78 p., 6 pl., 7 figs.	Out of print
2.	Oil and gas possibilities of western Whatcom County, by S. L. Glover. 1935. 69 p., 1 pl., 1 fig.	Out of print	16.	Origin and occurrence of gem stones in Washington, by S. L. Glover. 1949. 32 p.	Out of print
3.	A report on a geologic reconnaissance of the St. Helens mining district, Washington, by Everett Houland. 1935. 4 p., 1 fig.	Out of print	17.	Perlite and other volcanic glass occurrences in Washington, by M. T. Hunting. 1949. 32 p.	Out of print
4.	Preliminary report on petroleum and natural gas in Washington, by S. L. Glover. 1936. 24 p., 1 pl.	Out of print	18.	Molybdenum occurrences of Washington, by C. P. Purdy, Jr. 1954. 118 p., 13 pl., 4 figs.	Out of print
5.	Preliminary report on magnesite deposits of Stevens County, Washington, by W. A. G. Bennett. 1941. 25 p., 2 pl., 1 fig.	Out of print	19.	A stratigraphic section in the Yakima Basalt and the Ellensburg Formation in south-central Washington, by J. H. Mackin. 1961. 5 p., 9 pl., 4 figs.	Out of print
6.	Inventory of mineral properties in Snohomish County, Washington, by W. A. Broughton. 1942. 64 p., 1 pl. [Accompanied by Index to mineral properties of Snohomish County. 1942. 8 p., tables.]	Out of print	20.	Geological interpretation of airborne magnetometer and scintillometer survey—Mt. Bonaparte, Bodie Mountain, Curlew, Aeneas, and Republic quadrangles, Okanogan and Ferry Counties, Washington, by Hunting Geophysical Services, Inc. 1960. 34 p., 25 pl., 2 figs.	Out of print
7.	Character and tonnage of the Turk magnesite deposit, by W. A. G. Bennett. 1943. 22 p., 1 pl., 1 fig.	\$.23 .02 .25	21.	Stratigraphy of Eocene rocks in a part of King County, Washington, by J. D. Vine. 1962. 20 p., 3 figs.	Out of print

■ REPORTS OF INVESTIGATIONS ■

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Division of Geology and Earth Resources			
24. Mount St. Helens ash—Properties and possible uses, by W. S. Moen and G. B. McLucas. 1981. 60 p., 28 figs.	\$ 4.63 .37 \$ 5.00	31. Paleontology and stratigraphy of Eocene rocks at Pulali Point, Jefferson County, eastern Olympic Peninsula, Washington, by R. L. Squires, J. L. Goedert, and K. L. Kaler. 1992. 27 p., 3 pl., 7 figs.	\$ 1.85 .15 \$ 2.00
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26. Coastal wells of Washington, by W. W. Rau and C. R. McFarland. 1982. 4 sheets.	Free		
27. Geology of the Grande Ronde lignite field, Asotin County, Washington, by K. L. Stoffel. 1984. 79 p., 1 pl., scale 1:48,000, 71 figs.	\$ 3.71 .29 \$ 4.00		
28. Tin, tungsten, and molybdenum geochemistry of parts of Stevens and Spokane Counties, Washington, by B. B. Bunning. 1985. 57 p., 30 figs.	\$ 1.39 .11 \$ 1.50		

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2. Directory of Washington mines, 1939, compiled by Division of Mines and Mining. 1939. 21 p.	Out of print	Division of Mines and Geology	
3. January, 1940, supplement to directory of Washington mines, 1939, compiled by Division of Mines and Mining. 1940. 3 p.	Out of print	11. 1945 directory of Washington mining operations, by S. H. Green and Ward Carithers. 1945. 48 p.	Out of print
4. Preliminary report on strategic metals in Washington, by Division of Mines and Mining. 1940. 7 p.	Out of print	12. 1946 directory of Washington mining operations, by S. H. Green. 1946. 57 p.	Out of print
5. Directory of Washington metallic mining properties, by Division of Mines and Mining. 1940. 72 p.	Out of print	13. 1947 directory of Washington mining operations, by S. H. Green. 1947. 59 p.	Out of print
6. Summary of information on iron ore deposits of Washington, by Division of Mines and Mining. 1940. 11 p.	Out of print	14. Excerpts from "Washington fuel requirements and supplies", Battelle Memorial Institute survey report to Washington State Department of Conservation and Development, compiled by R. J. Lund and J. D. Sullivan. 1947. 19 p.	Out of print
7. Directory of Washington metallic mining properties, by Division of Mines and Mining. 1941. 74 p.	Out of print	15. Oil and gas exploration in Washington, by S. L. Glover. 1947. 49 p., 3 figs.	Out of print
8. Directory of Washington mining operations, by Ward Carithers. 1943. 36 p.	Out of print	15S. Wells drilled for oil or gas in Washington from 1945 to July 1953 inclusive; Supplement to Information Circular 15, by S. L. Glover. 1953. 9 p. (table).	Out of print
9. 1944 directory of Washington mining operations, by S. H. Green. 1944. 36 p.	Out of print	16. 1948 directory of Washington mining operations, by S. H. Green. 1948. 51 p.	Out of print
		17. 1949 directory of Washington mining operations, by M. T. Hunting. 1949. 62 p.	Out of print

■ INFORMATION CIRCULARS ■

(Continued)

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18.	1950 directory of Washington mining operations, by M. T. Hunting. 1950. 67 p.	Out of print	42.	1964 directory of Washington mining operations, by W. S. Moen and G. W. Thorsen. 1965. 86 p., 3 figs.	Out of print
19.	1951 directory of Washington mining operations, by R. H. Stebbins. 1951. 75 p., 2 figs.	Out of print	43.	1965-1966 directory of Washington mining operations, by W. S. Moen. 1967. 80 p., 3 figs.	Out of print
20.	1952 directory of Washington mining operations, by C. P. Purdy, Jr. 1952. 75 p., 2 figs.	Out of print	44.	1967-68 directory of Washington mining operations, by W. S. Moen. 1969. 78 p., 3 figs.	Out of print
21.	1953 directory of Washington mining operations, by C. P. Purdy, Jr. 1953. 81 p., 2 figs.	Out of print	45.	Geologic history and rocks and minerals of Washington, by V. E. Livingston, Jr. 1969. 42 p., 49 figs.	Out of print
22.	Introduction to Washington geology and resources, by C. D. Campbell. 1953. 42 p., 5 figs.	Out of print	46.	1969-70 directory of Washington mining operations, by W. S. Moen. 1971. 88 p., 3 figs.	Out of print
22R.	Introduction to Washington geology and resources, revised by C. D. Campbell. 44 p., 5 figs. [Revised 1962.]	Out of print	47.	Geology in land use planning—Some guidelines for the Puget Lowland, by E. R. Artim. 1973. 18 p., 2 pl., 6 figs.	Out of print
23.	1954 directory of Washington mining operations, by C. P. Purdy, Jr. 1954. 73 p., 2 figs.	Out of print	48.	1971-72 directory of Washington mining operations, by J. E. Schuster. 1973. 97 p., 3 figs.	Out of print
24.	1955 directory of Washington mining operations, by M. T. Hunting. 1955. 80 p., 2 figs.	Out of print	49.	Conconully mining district of Okanogan County, Washington, by W. S. Moen. 1973. 42 p., 16 figs.	Out of print
25.	1956 directory of Washington mining operations, by H. D. Banta. 1956. 88 p., 2 fig.	Out of print			
26.	Uranium in Washington (an extract from Bulletin 37, Part II), by M. T. Hunting. 1957. 10 p., 1 pl.	Out of print			
27.	1957 directory of Washington mining operations, by V. E. Livingston, Jr. 1957. 96 p., 2 figs.	Out of print			
28.	1958 directory of Washington mining operations, by W. S. Moen, V. E. Livingston, Jr., and G. W. Thorsen. 1958. 76 p., 2 figs.	Out of print			
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35.	1960 directory of Washington mining operations, by G. W. Thorsen. 1961. 84 p., 2 figs.	Out of print			
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37.	1962 directory of Washington mining operations, by G. W. Thorsen. 1963. 81 p., 2 figs.	Out of print			
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			61.	Annotated guide to sources of information on the geology, minerals, and ground-water resources of the Puget Sound region, Washington, King County section, by W. H. Reichert, with supplemental references by D. D. Dethier. 1978. 63 p., 8 figs.	\$ 1.39 _____ \$ 1.50

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62. Heat flow studies in the Steamboat Mountain—Lemei Rock area, Skamania County, Washington, by J. E. Schuster, D. D. Blackwell, P. E. Hammond, and M. T. Huntting. 1978. 56 p., 14 figs.	Out of print	78. A guide for the preliminary evaluation of rock for road surfacing, by V. E. Livingston, Jr. 1984. 8 p., 7 photos, 3 tables.	Free
63. 1977 directory of Washington mining operations, by P. C. Milne and C. W. Walker. 1978. 117 p.	Out of print	79. Compilation of earthquake hypocenters in western Washington—1979, by L. L. Noson, R. S. Ludwin, and R. S. Crosson. 1985. 19 p., 4 figs.	\$.46 _____.04
64. Compilation of earthquake hypocenters in western Washington—1975, by R. S. Crosson and L. L. Noson. 1978. 12 p., 2 figs.	\$.46 _____.04	80. Theses on Washington geology, 1901–1985, compiled by C. J. Manson. 1986. 400 p., 5 pl.	\$.50 \$ 7.41 _____.59 \$ 8.00
65. Compilation of earthquake hypocenters in western Washington—1976, by R. S. Crosson and L. L. Noson. 1978. 13 p., 2 figs.	\$.46 _____.04	<i>Update of Information Circular 70. Continued by Open File Report 94-2.</i>	
66. Compilation of earthquake hypocenters in western Washington—1977, by R. S. Crosson and L. L. Noson. 1978. 12 p., 3 figs.	\$.46 _____.04	81. The Puget Lowland earthquakes of 1949 and 1965—Reproductions of selected articles describing damage, compiled by G. W. Thorsen. 1986. 113 p.	\$ 2.32 _____.18 \$ 2.50
67. Oil and gas exploration in Washington, 1900–1978, by C. R. McFarland. 1979. 119 p., 43 oil and gas test well maps.	Out of print	82. Earthquake hypocenters in Washington and northern Oregon—1980, compiled by Anthony Qamar, Anne Rathbun, R. S. Ludwin, R. S. Crosson, and S. D. Malone. 1986. 64 p., 9 figs.	\$ 1.85 _____.15 \$ 2.00
67R. Oil and gas exploration in Washington, 1900–1981, by C. R. McFarland. 1981. 119 p., 43 oil and gas test well maps.	Out of print	83. Earthquake hypocenters in Washington and northern Oregon—1981, compiled by Anthony Qamar, Anne Rathbun, R. S. Ludwin, L. L. Noson, R. S. Crosson, and S. D. Malone. 1987. 50 p., 8 figs.	\$ 1.39 _____.11 \$ 1.50
<i>Superseded by Information Circular 75.</i>		84. Earthquake hypocenters in Washington and northern Oregon—1982–1986, compiled by Anthony Qamar, R. S. Ludwin, R. S. Crosson, and S. D. Malone. 1987. 78 p., 10 figs.	Out of print
68. Index to published geologic mapping in Washington, 1854–1970, by W. H. Reichert. 1979. 233 p., 104 page-size maps.	Out of print	85. Washington State earthquake hazards, by L. L. Noson, Anthony Qamar, and G. W. Thorsen. 1988. 77 p., 47 figs.	Free
69. Directory of Washington mining operations—1979, by C. R. McFarland, G. B. McLucas, J. G. Rigby, and K. L. Stoffel. 1980. 100 p., 3 figs.	Out of print	86. Geologic guidebook for Washington and adjacent areas, edited by N. L. Joseph and others. 1989. 369 p. [loose-leaf only]	\$ 4.17 _____.33 \$ 4.50
70. Theses on Washington geology—A comprehensive bibliography, 1901–1979, compiled by C. J. Manson. 1980. 212 p., 2 pl.	Out of print	87. Directory of Washington mining operations, 1992, by W. S. Lingley, Jr., and C. J. Manson. 1992. 76 p., 6 figs.	\$ 2.32 _____.18 \$ 2.50
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71. The 1980 eruption of Mount St. Helens, Washington, Part I: March 20–May 19, 1980, by M. A. Korosec, J. G. Rigby, and K. L. Stoffel. 1980. 27 p., 4 figs.	Out of print	89. Earthquake hypocenters in Washington and northern Oregon, 1987–1989, and Operation of the Washington Regional Seismograph Network, by R. S. Ludwin, A. I. Qamar, S. D. Malone, C. Jonientz-Trisler, R. S. Crosson, Richard Benson, and S. C. Moran. 1994. 40 p., 13 figs., 11 tables.	\$ 1.85 _____.15 \$ 2.00
72. Compilation of earthquake hypocenters in western Washington—1978, by L. L. Noson and R. S. Crosson. 1980. 18 p., 5 figs.	\$.46 _____.04	90. Flood basalts and glacier floods—Roadside geology of parts of Walla Walla, Franklin, and Columbia Counties, Washington, by R. J. Carson and K. R. Pogue. 1996. 47 p., 68 figs.	\$ 3.24 _____.26 \$ 3.50
73. Index to geologic and geophysical mapping of Washington, compiled by C. J. Manson. 1981. 63 p., 10 pl.	Out of print	91. Reconnaissance investigation of sand, gravel, and quarried bedrock resources in the Bellingham 1:100,000 quadrangle, Washington, by J. S. Loen, W. S. Lingley, Jr., Garth Anderson, and T. J. Lapen. 2001. 45 p., 4 figs., 4 tables, 1 pl., scale 1:100,000.	\$ 4.17 _____.33 \$ 4.50
<i>Updated as Information Circular 77.</i>			
74. The mineral industry of Washington—Highlights of its development, 1853–1980, by W. S. Moen. 1982. 26 p., 35 figs. [Reprinted 1983.]	\$.93 _____.07 \$ 1.00		
75. Oil and gas exploration in Washington, 1900–1982, by C. R. McFarland. 1983. 119 p., 43 oil and gas test well maps.	\$ 2.32 _____.18		
76. Mount St. Helens—Annotated index to video archives, by R. L. Logan and C. J. Manson. 1983. 51 p.	\$ 2.50 _____.13 \$ 1.50		
77. Index to geologic and geophysical mapping of Washington, 1899–1983, compiled by C. J. Manson. 1984. 56 p., 12 pl.	Out of print		

Replaced by Open File Report 92-8.

■ OPEN FILE REPORTS ■

Most open-file reports are preliminary and have not been edited or reviewed for conformity with our standards and geologic nomenclature. Those reports marked "nonreproducible" or "Lib. use only" can be inspected in the Division library in Olympia. All others can be purchased. See page 1 of this booklet for our address.

No.

Division of Geology

- 21-0. Geological investigation of the proposed Grand Coulee Reservoir, by O. P. Jenkins and H. H. Cooper. 1921. 21 p., 1 pl., scale 1:63,360 [plate nonreproducible].
 25-0. Geology and resources of the Pasco and Prosser quadrangles, by Solon Shedd. 1925. 125 p., 1 pl. [nonreproducible].

Division of Mines and Geology

- 68-1. Washington State coastal wells, by W. W. Rau. 1968. 1 sheet (chart).
Superseded by Report of Investigations 26.
 69-0. Compilation of geologic mapping in Washington through 1968—A continuation of Leona Boardman's index to geologic mapping in Washington; also, Geologic maps from theses on Washington geology, by W. H. Reichert. 1969. 43 p., 11 maps, scale 1:1,000,000 [nonreproducible].
 69-1. Geology and mineral deposits in Stevens County, Washington, by N. P. Campbell and R. K. Sorem. 1969. 5 p., 7 pl. [paper copies].
Mylar copies of the plates are available for an additional \$40.00.
 69-2. Analyses of stream sediment samples in Washington for copper, molybdenum, lead, and zinc, by W. S. Moen. 1969. 91 p. (including 15 tables), 39 pl., scale 1:125,000.
 72-1. Report on geothermal ground noise measurements in Washington State, by R. S. Crosson and I. R. Mayers. 1972. 50 p. (including addendum).

Division of Geology and Earth Resources

- 73-1. Preliminary report on the geology of southern Snohomish County, by Gerald Capps, J. D. Simmons, and F. D. Videgar. 1973. 12 p., 1 pl. [nonreproducible].
 73-2. Slope stability of the Longview-Kelso urban area, Cowlitz County, by A. J. Fiksdal. 1973. 4 p., 2 pl., scale 1:24,000.
 73-3. Preliminary geologic map of the southern Cascade Range, by P. E. Hammond. 1973. 5 pl., scales 1:24,000, 1:125,000, 1:500,000.
 73-4. A learning guide on the geology of the Cispus Environmental Center area, Lewis County, Washington, by J. E. Schuster. 1973. 53 p.
 73-5. East Wenatchee and vicinity geologic hazard maps, by E. R. Artim. 1973. 9 sheets, scale 1:24,000 [nonreproducible].
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ArcInfo versions of 1:100,000-scale geologic maps covering the entire state of Washington are available free on CD-ROM (see back cover for location of quadrangles). Contact our Olympia office (see p. 1) for details. This work was supported by the U.S. Geological Survey STATEMAP program. We would appreciate credit as the source of the data.

■ AUTHOR INDEX ■

Key to Author and Subject Indexes

AR – Annual Reports
 B – Bulletins
 GM – Geologic Maps
 IC – Information Circulars
 OFR – Open File Reports
 RI – Reports of Investigations
 TM – Topographic Maps
 * – Coauthor or editor

- Abrams, M. J. – RI 25*
 Anderson, D. L. – IC 31; IC 39
 Anderson, Garth – IC 91*; OFR 98-5*;
 OFR 99-3*; OFR 2000-1*;
 OFR 2000-6*
 Anderson, James Lee – OFR 87-14;
 OFR 87-15
 Armstrong, F. C. – B 61*
 Arnold, Ralph – AR 1902, Part VI
 Artim, E. R. – GM-15; GM-16; IC 47;
 OFR 73-5; OFR 73-6; OFR 75-1;
 OFR 76-0; OFR 76-1; OFR 77-2*
 Banister, D. P. – GM-3
 Banta, H. D. – IC 25
 Baptista, A. M. – GM-49*
 Barksdale, J. D. – B 68
 Barnes, D. J. – GM-30*
 Barnett, D. B. – OFR 86-2; OFR 89-2
 Batatian, L. D. – OFR 86-1*
 Battie, John – OFR 75-2
 Beikman, H. M. – B 47
 Bennett, W. A. G. – B 35; B 49;
 Geologic Map, 1961*; IC 10*;
 RI (Geology) 5; RI (Geology) 7; RI 13
 Benson, H. K. – B 14*
 Benson, Richard – IC 89*
 Bentley, R. D. – GM-28; GM-29; GM-35;
 GM-36; GM-37; OFR 93-3
 Berri, D. A. – OFR 83-5
 Bethune, G. A. – AR 1891; AR 1892
 Bigelow, P. K. – OFR 91-7*
 Biggane, J. H. – OFR 81-7; OFR 82-6;
 OFR 83-2; OFR 83-7*
 Bingham, J. W. – B 71*
 Birdseye, R. U. – OFR 74-1; OFR 76-26;
 OFR 76-27; OFR 76-28; OFR 76-29;
 OFR 76-30
 Black, G. L. – RI 32*
 Blackwell, D. D. – GM-25; IC 62*;
 OFR 80-9; OFR 81-3*; OFR 85-6
 Bloomquist, R. G. – GM-25; OFR 80-10;
 OFR 94-11
 Bonini, W. E. – GM-11
 Brainard, R. C. – OFR 85-7*
 Brandon, M. T. – OFR 92-6
 Bretz, J. H. – B 8; B 45
 Brookfield, C. M. – OFR 96-7*
 Broughton, W. A. – B 34*; RI (Geology) 6;
 RI 8; RI 10; RI 12; RI 14
 Brunengo, M. J. – OFR 95-1*
 Bunning, B. B. – GM-39*; RI 28; OFR 90-9
 Burnetti, Debbie – B 76*
 Byers, H. G. – AR 1902, Part V
 Camp, V. E. – GM-31*; GM-40*
 Campbell, C. D. – IC 22; IC 22R; OFR 75-3
 Campbell, N. P. – GM-28*; GM-29*;
 GM-35*; GM-36*; GM-37*; IC 54;
 OFR 69-1; OFR 76-11; OFR 77-2;
 OFR 77-7; OFR 77-8; OFR 79-3*;
 OFR 79-8; OFR 79-12; OFR 79-13;
 OFR 79-15; OFR 88-5; OFR 92-3;
 OFR 93-3*
 Capps, Gerald – OFR 73-1
 Carithers, Ward – B 36; IC 8; IC 11*; RI 15
 Carson, R. J. – GM-21*; IC 90; OFR 74-1*;
 OFR 75-4; OFR 76-2; OFR 76-3;
 OFR 76-4; OFR 76-5; OFR 76-15;
 OFR 76-16
 Caruthers, C. G. – GM-49*
 Cary, A. S. – IC 41*
 Cass, Jason – OFR 2000-6*
 Cheney, E. S. – B 80*; OFR 99-4
 Christie, R. A. – OFR 94-1; OFR 94-7*;
 OFR 94-16
 Clark, L. D. – GM-5
 Clayton, G. A. – OFR 80-8; OFR 81-3*;
 OFR 83-7*
 Combellick, R. A. – RI 32*
 Cooper, H. H. – B-27*; OFR 21-0*
 Crandell, D. R. – R 2
 Cross, Randy – OFR 74-2*
 Crosson, R. S. – IC 53; IC 55; IC 56; IC 64;
 IC 65; IC 66; IC 72*; IC 79*; IC 82*;
 IC 83*; IC 84*; IC 89*; OFR 72-1;
 OFR 77-10; OFR 77-11; OFR 78-4
 Culver, H. E. – B 19; B 32; B 34;
 RI (Geology) 1
 Cushman, C. D. – OFR 83-9*
 Dana, T. A. M. – B 47*
 Daneš, Z. F. – GM-11*; GM-27; OFR 75-5;
 OFR 79-6; OFR 81-3*; OFR 81-4;
 OFR 83-1; OFR 83-7*; OFR 85-5
 Daniels, Joseph – B 10; OFR 79-1
 Danner, W. R. – B 52
 Daugherty, R. D. – IC 32
 Derkey, R. E. – OFR 90-18; OFR 97-3;
 OFR 98-6; OFR 99-6
 Dethier, D. D. – IC 61*; OFR 96-7
 Dishberger, D. M. – OFR 83-4
 Dragovich, J. D. – GM-44; GM-46;
 OFR 95-1; OFR 95-3; OFR 97-2;
 OFR 97-4; OFR 98-5; OFR 98-8;
 OFR 99-3; OFR 2000-1; OFR 2000-6
 Dunn, Andrew – OFR 97-4*
 Duncan, G. W. – OFR 85-7*
 Eberle, N. A. – OFR 94-7*
 Erdakos, G. B. – GM-49*
 Erikson, E. H., Jr. – OFR 76-6
 Evans, G. W. – B 3; B 30*
 Fakundiny, R. H. – OFR 96-4
 Fecht, K. R. – GM-45*; OFR 94-8*;
 OFR 94-13*
 Fiksdal, A. J. – OFR 73-2; OFR 75-10;
 OFR 75-11; OFR 78-2
 Fischer, H. J. – OFR 76-14; OFR 77-12
 Folsom, M. M. – OFR 80-12
 Fox, K. F., Jr. – B 64*; B 65
 Fyles, J. T. – B 61*
 Galster, R. W. – B 78*
 Garver, J. L. [J. I.] – OFR 90-19*
 Gayer, M. J. – OFR 76-21; OFR 76-22;
 OFR 76-23; OFR 76-24; OFR 76-25
 Gaylord, D. R. – RI 30
 Gerstel, W. J. – GM-43*; GM-47*;
 OFR 96-3; OFR 98-6*; OFR 99-2;
 OFR 2000-4
 Gilbertson, L. A. – OFR 2000-6*
 Gillespie, B. A. – OFR 96-5*
 Glover, S. L. – B 21*; B 24; B 33; IC 10;
 IC 15; IC 15, supp.; RI (Mines) 2;
 RI (Mines) 3; RI (Geology) 2;
 RI (Geology) 4; RI 16
 Goedert, J. L. – RI 31*
 Gower, H. D. – B 47*; GM-2
 Grant, A. R. – B 58
 Green, S. H. – IC 9; IC 11; IC 12; IC 13;
 IC 16; RI (Mines) 4; RI (Mines) 4R;
 RI (Mines) 7
 Gresens, R. L. – B 75; OFR 75-6; OFR 78-0
 Grisamer, C. L. – OFR 98-5*; OFR 98-8*
 Grocock, G. R. – IC 51*
 Groffman, L. H. – RI 30*
 Grolier, M. J. – B 71
 Guard, A. K. – B 36*
 Gulick, C. W. – GM-39*; GM-45*;
 OFR 90-1; OFR 90-2; OFR 90-6;
 OFR 90-12; OFR 94-6; OFR 94-14
 Gusey, Daryl – OFR 92-3*
 Hall, J. B. – GM-12; OFR 76-12*
 Hall, Tammy – OFR 85-3*
 Halliday, W. R. – IC 40
 Hamilton, M. M. – OFR 99-6*
 Hammond, P. E. – IC 62*; OFR 73-3;
 OFR 75-13; OFR 83-7*; OFR 83-13

■ AUTHOR INDEX ■

(Continued)

- Hanson, K. L. – OFR 76-7; OFR 76-17;
OFR 76-18; OFR 76-19; OFR 76-20
- Hanson, L. G. – OFR 79-3*; OFR 79-7;
OFR 79-10; OFR 79-14
- Harris, C. F. T. – OFR 91-5*
- Haugerud, R. A. – GM-46*; OFR 97-2*
- Heine, R. E. – AR 1902, Part V
- Heinitz, A. C. – GM-49*
- Henriksen, D. A. – B 43
- Herman, N. E. – OFR 83-8*; OFR 83-8,
Addendum
- Hill, T. B. – IC 1
- Hogge, C. E. – OFR 85-7*
- Holmes, Jenny – OFR 83-10
- Hooper, P. R. – GM-26; GM-31; GM-40*;
OFR 96-5
- Houglund, Everett – RI (Geology) 3
- Houston, H. H. – B 38
- Hughes, D. W. – GM-11*
- Hunting Geophysical Services, Inc. – RI 20
- Huntington, M. T. – B 37, Part I, 2nd ed.*;
B 37, Part II; B 42; Geologic Map, 1961;
IC 24; IC 26; IC 57*; IC 62*; RI 9;
RI 17; R 10; IC 17; IC 18
- Hurley, B. W. – OFR 76-13
- Jacobs, Joseph – B 14*
- Jenkins, O. P. – B 26; B 27*; B 28; B 29;
B 31; OFR 21-0
- Johnston, Donnella – OFR 75-2*
- Jonientz-Trisler, Chris – IC 89*
- Joseph, N. L., – GM-39*; IC 86*;
OFR 90-13; OFR 90-16; OFR 90-17;
OFR 90-18*
- Kahle, S. C. – OFR 97-4*
- Kaler, K. L. – GM-25*; OFR 80-7*;
OFR 91-7*; RI 31*
- Kamphaus, R. A. – GM-49*
- Kelley, S. A. – OFR 85-6*
- Kiver, E. P. – OFR 79-3*; OFR 79-10*;
OFR 79-11; OFR 99-6*
- Koler, M. L. – OFR 83-8*; OFR 94-7*
- Korosec, M. A. – GM-25; GM-34*;
GM-39*; IC 71; OFR 80-4; OFR 80-7;
OFR 80-11; OFR 81-3; OFR 81-8*;
OFR 82-1; OFR 82-2; OFR 82-3;
OFR 83-5*; OFR 83-7; OFR 83-12;
OFR 83-13*; OFR 84-1; OFR 84-2;
OFR 87-5; OFR 87-6; OFR 89-2*;
OFR 89-3; OFR 90-6*; OFR 90-12*
- Lambert, T. M. – OFR 86-1*
- Landes, Henry – AR 1902, Part I; AR 1902,
Part II; AR 1902, Part III; AR 1902,
Part IV; AR 1903, Part II; B 2; B 11;
B 14; B 17
- Lapen, T. J. – IC 91*; OFR 99-3*;
OFR 2000-5
- LaSalata, F. V. – OFR 84-6
- Laskowski, E. R. – OFR 85-7*
- Lasmanis, Raymond – B 80*; OFR 85-3;
OFR 90-18*
- Leighton, M. M. – B 18; B 22
- Lewellen, D. G. – OFR 83-9
- Lillie, J. T. – OFR 79-13*
- Lindsey, K. A. – OFR 88-3; RI 30
- Lingley, W. S., Jr. – IC 87; IC 91*;
OFR 91-2*; OFR 91-5; OFR 2000-4*
- Livingston, V. E., Jr. – B 54; B 63; Geologic
Map, 1961*; IC 27; IC 28*; IC 29;
IC 33; IC 38; IC 45; IC 78
- Loen, J. S. – IC 91
- Logan, R. L. – GM-34*; GM-43*; IC 76;
OFR 87-8; OFR 87-9; OFR 91-7;
OFR 98-5*; OFR 98-6*; OFR 98-7*
- Longwill, W. D. – GM-30*
- Lucas, H. E. – RI 25*
- Lucas, J. M. – OFR 75-14; OFR 76-31;
OFR 77-13
- Ludwin, R. S. – IC 79*; IC 82*; IC 83*;
IC 84*
- Lund, R. J. – IC 14
- Luperh, R. L. – RI 11
- Lyon, D. A. – AR 1902, Part II
- Mabey, M. A. – GM-42
- Mackin, J. H. – RI (Mines) 6; RI 19; IC 41
- Madin, I. P. – GM-42*
- Magnuson, R. L. – B 67*
- Mallory, V. S. – OFR 90-19*
- Malone, S. D. – IC 82*; IC 83*; IC 84*;
IC 89*
- Mangum, A. W. – B 14*
- Manson, C. J. – B 76; B 79; B 81; IC 70;
IC 73; IC 76*; IC 77; IC 80; IC 87*;
OFR 83-3; OFR 84-5; OFR 84-7;
OFR 86-5; OFR 88-1; OFR 88-2;
OFR 88-4; OFR 89-1; OFR 90-3;
OFR 90-8; OFR 91-1; OFR 91-3;
OFR 92-1; OFR 92-2; OFR 92-4;
OFR 92-8; OFR 93-1; OFR 93-2;
OFR 94-2; OFR 94-5; OFR 94-15;
OFR 95-2; OFR 96-1; OFR 96-6;
OFR 97-1; OFR 98-1; OFR 98-2;
OFR 98-3; OFR 98-4; OFR 99-1;
OFR 99-5; OFR 2000-2
- Mayers, I. R. – OFR 72-1*
- McEuen, R. B. – OFR 81-3*
- McFarland, C. R. – IC 67; IC 67R; IC 69;
IC 75; RI 26*
- McGroder, M. F. – OFR 90-5*; OFR 90-19
- McKay, D. T., Jr. – OFR 2000-6*
- McKee, E. H. – GM-4*
- McLucas, G. B. – IC 69*; OFR 80-2;
OFR 80-3; OFR 81-1; OFR 81-2; RI 24*
- Melrose, J. W. – RI (Mines) 1
- Menard, M. C. – OFR 84-6*
- Millard, R. C. – IC 56*
- Miller, F. K. – GM-5*; GM-6; GM-7; GM-8;
GM-9; GM-10
- Miller, R. B. – GM-46*; OFR 85-2;
OFR 87-17
- Mills, J. W. – B 48; B 70; GM-32;
OFR 85-4; OFR 85-7; R 6
- Milne, P. C. – IC 63; OFR 79-2
- Milne, Scott – OFR 74-2
- Misch, Peter – GM-23
- Moen, W. S. – B 50; B 51; B 55; B 57; B 69;
B 73; Geologic Map, 1961*; GM-22;
IC 28; IC 36; IC 42; IC 43; IC 44;
IC 46; IC 49; IC 57; IC 60; IC 74;
OFR 69-2; OFR 79-0; RI 24
- Moran, S. C. – IC 89*
- Myers, E. P., III – GM-49*
- Naeser, C. W. – OFR 78-0*
- Neff, J. L. – B 67
- Nilsen, T. H. – IC 59
- Noble, J. B. – OFR 90-4
- Norman, D. K. – GM-41*; GM-46*;
OFR 92-5; OFR 94-4; OFR 95-3*;
OFR 96-2; OFR 97-2*; OFR 98-5*;
OFR 99-3*; OFR 2000-1*; OFR 2000-3;
OFR 2000-6*
- Noson, L. L. – IC 64*; IC 65*; IC 66*;
IC 72; IC 79; IC 83*; IC 85;
OFR 77-10*; OFR 77-11*; OFR 78-4*
- O'Donnell, Gretchen – B 12
- Othberg, K. L. – GM-12*; OFR 75-7;
OFR 75-8; OFR 76-12; OFR 79-3*;
OFR 79-16*; OFR 79-17; OFR 79-18;
OFR 79-19; OFR 79-20
- Palmer, Pamela – OFR 77-6; OFR 79-17*;
OFR 79-18*; OFR 79-19*; OFR 79-20*
- Palmer, S. P. – GM-41; GM-42*; GM-43;
GM-44*; GM-47; OFR 91-5*; OFR 92-7
- Parkinson, K. T. – OFR 97-4*
- Patty, E. N. – B 21; B 23; B 25*
- Phillips, W. M. – B 47; GM-27*; GM-34*;
OFR 82-1*; OFR 82-2*; OFR 82-4*;
OFR 82-5; OFR 83-1*; OFR 83-6*;
OFR 83-7*; OFR 83-16*; OFR 84-4*;
OFR 87-4; OFR 87-10; OFR 87-13
- Pogue, K. R. – IC 90*
- Powell, J. E. – GM-35*; GM-36*; GM-37*;
OFR 93-3*
- Pringle, P. T. – GM-44*; IC 88; OFR 97-2*;
OFR 97-4*
- Purdy, C. P. – B 39; IC 20; IC 21; IC 23;
RI 18
- Qamar, Anthony – IC 82; IC 83; IC 84;
IC 85*; IC 89*
- Quinn, R. R. – OFR 80-12*
- Rathbun, Anne – IC 82*; IC 83*

■ SUBJECT INDEX ■

- Rau, W. W. – B 53; B 56; B 62; B 66; B 72; GM-13; GM-24; GM-33; IC 51; OFR 68-1; OFR 80-5; RI 26
- Reichert, W. H. – B 46; B 59; IC 61; IC 68; OFR 69-0; OFR 76-00
- Reidel, S. P. – GM-38; GM-40; GM-45*; OFR 94-8; OFR 94-13
- Rhoads, Linden – OFR 91-5*
- Rigby, J. G. – IC 69*; IC 71*; OFR 78-3*; OFR 79-3; OFR 79-5*; OFR 79-10*; OFR 79-11*; OFR 81-5
- Rigg, G. B. – B 44
- Rinehart, C. D. – B 64; B 65*; B 74
- Roberts, Milnor – AR 1902, Part II
- Roloff, J. M. – OFR 96-2*
- Ruddy, C. A. – AR 1902, Part V; AR 1903, Part II
- Saunders, E. J. – B 9; B 14*
- Schasse, H. W. – B 47; GM-34; GM-41*; OFR 82-4*; OFR 82-5*; OFR 83-6; OFR 83-8; OFR 84-6*; OFR 87-11; OFR 87-16; OFR 94-7; OFR 98-7; OFR 2000-7
- Schnitzer, E. F. – OFR 96-2*
- Schroeder, M. C. – B 40
- Schuster, J. E. – B 77; GM-25*; GM-45; IC 48; IC 62; Page-Size Geologic Map, 1992; OFR 73-4; OFR 76-8; OFR 81-3*; OFR 81-8; OFR 82-1*; OFR 83-7*; OFR 93-4; OFR 94-3; OFR 94-9; OFR 94-10; OFR 94-11; OFR 94-12
- Searls, Craig – OFR 75-2*
- Shedd, Solon – AR 1902, Part IV; AR 1903, Part I; B 4; B 27; B 30; OFR 25-0
- Sheppard, R. A. – GM-3
- Simmons, J. D. – OFR 73-1*
- Simpson, S. J. – GM-25
- Smith, Mackey – GM-14; GM-17; GM-18; GM-19; GM-20; GM-21; OFR 75-12; OFR 76-9; OFR 77-9
- Smith, M. T. – OFR 91-4; OFR 91-6
- Snavely, P. D., Jr. – RI 22
- Snook, J. R. – RI 25
- Sorem, R. K. – OFR 69-1*
- Squires, R. L. – RI 31
- Stallard, Bruce – IC 30
- Stebbins, R. H. – IC 19
- Steele, J. L. – OFR 85-6*
- Stoffel, K. L. – GM-39; IC 69*; IC 71*; OFR 80-0; OFR 81-6; OFR 83-14; OFR 83-15; OFR 90-5; OFR 90-10; OFR 90-11; RI 27
- Stose, G. W. – Geologic Map, 1936
- Stradling, D. F. – OFR 79-3*; OFR 79-10*; OFR 79-11*; OFR 99-6*
- Stromme, Olaf – B 2*
- Sullivan, J. D. – IC 14*
- Suneson, N. H. – OFR 96-4*
- Taken, V. J. – OFR 87-12
- Terich, T. A. – OFR 77-1
- Thorsen, G. W. – IC 28*; IC 34; IC 35; IC 37; IC 42*; IC 81; IC 85*; OFR 75-3*; OFR 79-16; OFR 83-3*; RI 23
- Throop, A. H. – OFR 96-2*
- Thyng, W. S. – AR 1902, Part II
- Tomson, J. H. – OFR 86-1*; OFR 87-1*
- Troost, M. L. – OFR 2000-6*
- Tubbs, D. W. – IC 52
- Tucker, G. B. – OFR 78-3; OFR 79-5
- Umpleby, J. B. – B 1; B 5
- U.S. Department of Labor, Mine Safety and Health Administration – OFR 87-7
- U.S. Geological Survey – RI 2
- University of Washington Geology Department – IC 38
- Valentine, G. M. – B 37, Part I; B 37, Part 1, 2nd ed.
- Van Nuys, M. H. – B 41; B 41S
- Vance, J. A. – OFR 92-6*
- Videgar, F. D. – OFR 73-1*
- Vine, J. D. – GM-1; RI 21
- Vonheeder, E. R. – OFR 75-9; OFR 77-3; OFR 77-4; OFR 77-5; OFR 78-1; OFR 78-5; OFR 79-4
- Wagner, H. C. – OFR 85-1; OFR 86-1; OFR 87-1; RI 22
- Waggoner, S. Z. – GM-39*; OFR 90-7; OFR 90-14; OFR 90-15
- Walker, C. W. – IC 63*; OFR 80-1; OFR 83-9*
- Walkling, Lee – OFR 98-4*
- Walsh, T. J. – B 47; GM-34; GM-43*; GM-47*; GM-49; OFR 82-4; OFR 82-5*; OFR 83-6*; OFR 83-16; OFR 83-17; OFR 84-3; OFR 84-6*; OFR 86-3; OFR 86-4; OFR 87-2; OFR 87-3; OFR 87-13*; OFR 91-2; RI 32
- Wampler, P. J. – OFR 96-2*
- Wanek, A. A. – GM-2*
- Washburn, A. L. – RI 29
- Washington Division of Geology and Earth Resources staff – IC 50; IC 58; TM-1; TM-2; TM-3
- Washington Division of Mines and Mining – IC 2; IC 3; IC 4; IC 5; IC 6; IC 7
- Washington Mining Bureau – AR 1892
- Waugh, Kathleen – OFR 83-10*
- Weaver, C. E. – B 6; B 7; B 13; B 15; B 16; B 20
- Webster, G. D. – GM-26*; GM-31*; GM-40*; OFR 79-3*; OFR 79-9; OFR 79-13*
- Wegmann, K. W. – OFR 2000-7*
- Weissenborn, A. E. – B 61
- Whetten, J. T. – OFR 78-0*
- White, D. P. – OFR 96-7*
- Whitwell, G. E. – B 25
- Widness, S. E. – OFR 83-11; OFR 83-14*; OFR 83-15*
- Wise, W. S. – B 60
- Wolfe, E. W. – GM-4
- Wunder, J. M. – OFR 76-1*; OFR 76-10
- Zapffe, Carl – RI (Mines) 5
- Zurenko, Stephanie – GM-45*

SUBJECT INDEX

General materials, Washington geology – AR 1901; AR 1902; B 32; B 77; B 80; IC 22R; IC 49; RI 22

Adams County

Geology – B 71; GM-38; GM-45; OFR 79-2; OFR 79-10; OFR 79-11; OFR 79-13; OFR 90-2; OFR 90-7; OFR 94-13; OFR 94-14

Geothermal resources – OFR 83-11

Maps, geologic – GM-38; GM-45; OFR 79-2; OFR 79-10; OFR 79-11; OFR 79-13; OFR 90-2; OFR 90-7; OFR 94-13; OFR 94-14

Maps, topographic – TM-3

Alaska

Earthquakes – RI 32

Liquefaction – RI 32

Antimony – B 39

Archaeology – IC 30; IC 32

Asotin County

Geology – GM-31; GM-40; GM-45; OFR 79-9; OFR 81-6; OFR 93-4; OFR 94-6; OFR 96-5; RI 27

Maps, geologic – GM-31; GM-40; GM-45; OFR 79-9; OFR 93-4; OFR 94-6; OFR 96-5; RI 27

Maps, topographic – TM-3

Mineral resources – OFR 81-6

Barite – B 51

Benton County

Geology – GM-45; OFR 23-1; OFR 79-2; OFR 79-8; OFR 79-13; OFR 94-8; OFR 94-9; OFR 94-13; RI (Geology) 1

Hydrology – B 26

Maps, geologic – GM-45; OFR 23-1; OFR 79-2; OFR 79-8; OFR 79-13; OFR 94-8; OFR 94-9; OFR 94-13

Maps, topographic – TM-3

■ SUBJECT INDEX ■

(Continued)

Benton County (*continued*)

Mineral resources – OFR 25-0;
OFR 79-2; RI (Geology) 1

Best Management Practices – OFR 96-2

Bibliography

Columbia Basin – OFR 78-3; OFR 79-5

Ferry County – OFR 88-2

General geology and mineral resources –
AR 1901, Part VI; B 12; B 35; B 46;
B 59; B 76; B 79; B 81; OFR 76-00;
OFR 84-5; OFR 86-5; OFR 90-8;
OFR 91-3; OFR 92-4; OFR 93-2;
OFR 94-15; OFR 95-2; OFR 96-6;
OFR 97-1; OFR 98-2; OFR 99-5;
OFR 2000-2

Geothermal resources – OFR 80-4;
OFR 94-1

King County – IC 61

Landslides – OFR 83-3; OFR 88-1;
OFR 98-3

Maps – IC 68; IC 70; IC 73; IC 77;
IC 80; OFR 69-0; OFR 78-3;
OFR 79-5; OFR 90-3; OFR 91-1;
OFR 92-1; OFR 92-8; OFR 93-1;
OFR 94-2; OFR 95-2; OFR 96-1;
OFR 98-1; OFR 99-1

Marine geology and mineral resources –
OFR 87-12

Metal mining – OFR 94-16

Seismic hazards – OFR 88-4; OFR 92-2

Theses – IC 70; IC 80; OFR 69-0;
OFR 89-1; OFR 90-3; OFR 91-1;
OFR 92-1; OFR 93-1; OFR 94-2;
OFR 95-2; OFR 96-1; OFR 98-1

Tsunamis – OFR 94-5; OFR 98-4

USGS open-file reports – OFR 84-7

Volcanism – OFR 81-5

Building Stone and Road Building

Materials – AR 1902, Part I; B 2; B 22;
B 55; IC 10; IC 78

Cascade Range

Geochronology – OFR 83-13

Geomorphology – IC 41

Geophysics (gravity surveys) – GM-27;
OFR 81-4; OFR 83-1; OFR 83-4

Geothermal resources – OFR 86-2

Maps, geologic – OFR 73-3; OFR 75-13;
OFR 90-19

Maps, geophysical – GM-27; OFR 81-4;
OFR 83-4

Mineral resources – B 58; OFR 83-16

Petrology – OFR 83-13

Stratigraphy – OFR 90-19

Structures and tectonics – OFR 81-2

Caves – IC 40

Cement – B 4

Chelan County

Geologic hazards – OFR 73-5; OFR 73-6
Geology – B 6; B 68; B 75; GM-39;
GM-46; IC 38; OFR 73-3;
OFR 75-6; OFR 79-2; OFR 79-14;
OFR 87-17; OFR 88-5; OFR 90-6;
OFR 90-9; OFR 95-3

Guidebooks – IC 38

Maps, geologic – B 6; B 52; B 58; B 68;
B 75; GM-39; GM-46; OFR 73-3;
OFR 73-6; OFR 75-6; OFR 76-6;
OFR 79-2; OFR 79-14; OFR 87-17;
OFR 88-5; OFR 90-6; OFR 90-9;
OFR 95-3; RI 10; RI 11; RI 12;
RI 17

Maps, topographic – TM-2

Mineral resources – B 6; B 52;
OFR 90-18; RI (Mines) 3; RI 9;
RI 10; RI 11; RI 12; RI 17

Petrology – OFR 76-6; OFR 78-0; RI 17

Structural geology and tectonics –
OFR 88-5

Chromium – OFR 75-14

Clallam County

Geology – B 72; GM-24; OFR 79-17;
OFR 79-18; OFR 79-19; OFR 79-20;
OFR 98-7; OFR 99-2; OFR 2000-4;
OFR 2000-7

Maps, geologic – B 52; GM-12;
GM-24; OFR 79-17; OFR 79-18;
OFR 79-19; OFR 79-20; OFR 98-7;
OFR 2000-4; OFR 2000-7

Mineral resources – B 52

Clark County

Geologic hazards – GM-42; OFR 75-10;
OFR 75-12

Geology – B 58; GM-34; OFR 87-4;
OFR 87-10

Geophysics – OFR 79-6

Maps, geologic – GM-34; OFR 87-4;
OFR 87-10

Maps, geophysical – OFR 79-6

Maps, topographic – TM-1

Mineral resources – IC 60; OFR 75-11

Clay and Shale – B 24

Coal

General works – AR 1901, Part IV;
AR 1902, Part II; B 47; RI (Mines) 4

Abandoned mines – OFR 84-6

Asotin County – OFR 81-6; RI 27

Bibliography – OFR 83-6

Cowlitz County – B 19; OFR 77-5;
OFR 83-8; OFR 84-6

Geochemistry and coal rank –
OFR 82-5; OFR 83-16; OFR 91-2

King County – B 3; OFR 83-8;

OFR 83-8; Addendum; OFR 83-17;
OFR 84-3; OFR 84-4; OFR 84-6

Kittitas County – B 9; OFR 78-1;
OFR 80-1; OFR 83-8; OFR 83-8,
Addendum; OFR 83-9; OFR 84-6

Lewis County – B 19; OFR 77-4;
OFR 83-8; OFR 83-8, Addendum;
OFR 84-6

Mine maps – OFR 83-8; OFR 83-8,
Addendum; OFR 94-7

Pierce County – B 10; OFR 79-1;
OFR 79-4; OFR 83-8; OFR 83-8,
Addendum; OFR 84-6

Skagit County – B 29; OFR 78-5;
OFR 83-8; OFR 84-6

Thurston County – B 19; OFR 83-8;
OFR 84-6

Whatcom County – B 28; OFR 75-9;
OFR 77-3; OFR 83-8; OFR 83-8,
Addendum; OFR 84-6

Columbia Basin

Bibliography – OFR 78-3; OFR 79-5

Geology – GM-38; GM-45; OFR 79-3;
OFR 94-13; OFR 94-14

Geothermal resources – OFR 81-7;
OFR 82-1; OFR 83-11;
OFR 83-14; OFR 83-15; OFR 94-11

Glacial geology – B 45

Maps, geologic – GM-38; GM-45;
OFR 79-3; OFR 88-5; OFR 94-13;
OFR 94-14; OFR 96-5

Maps, topographic – TM-3

Stratigraphy – RI 19

Structures and tectonics – OFR 88-5

Columbia County

Geology – GM-45; IC 90; OFR 79-9;
OFR 93-4; OFR 94-3; OFR 94-6;
OFR 94-14; OFR 96-5

Maps, geologic – GM-45; OFR 79-9;
OFR 93-4; OFR 94-3; OFR 94-6;
OFR 94-14; OFR 96-5

Maps, topographic – TM-3

Guidebooks – IC 90

Copper – B 65; OFR 69-2

Cowlitz County

Geology – B 43; B 54; GM-34;
OFR 73-3; OFR 87-2; OFR 87-4;
OFR 87-10

Landslides – OFR 73-2

Maps, geologic – B 19; B 43; B 54;
GM-34; OFR 73-3; OFR 87-2;
OFR 87-4; OFR 87-10

Maps, topographic – TM-1

Mineral resources – B 19; IC 60;
OFR 77-5; OFR 83-8; OFR 84-6

Stratigraphy – B 43; B 54

■ SUBJECT INDEX ■

(Continued)

Curriculum Materials – OFR 96-4

Dolomite – RI 13

Douglas County

Geology – B 75; GM-39; OFR 79-2; OFR 79-7; OFR 79-10; OFR 79-14; OFR 88-5; OFR 90-1; OFR 90-6; OFR 90-12

Geology and geologic maps – B 75; GM-39; OFR 79-7; OFR 79-10; OFR 79-14; OFR 88-5; OFR 90-2

Maps, geologic – B 75; GM-39; OFR 79-2; OFR 79-7; OFR 79-10; OFR 79-14; OFR 88-5; OFR 90-1; OFR 90-6; OFR 90-12

Maps, topographic – TM-2

Structures and tectonics – OFR 88-5

Earthquakes and Seismology

Alaska – RI 32

General works – IC 85; Earthquake Packet

Bibliography – OFR 88-4; OFR 92-2

Catalogs – IC 53; IC 55; IC 56; IC 64; IC 65; IC 66; IC 72; IC 79; IC 82; IC 83; IC 84; IC 89; OFR 77-10; OFR 77-11; OFR 78-4

Planning – IC 47; IC 81; IC 85; OFR 75-12; OFR 92-7

Regional studies – GM-42

(*see also Landslides and Slope Stability; Liquefaction; Tsunamis*)

Energy Resources – B 38; IC 14; IC 50

Engineering Geology

General works – B 78; IC 58

Soil mechanics – GM-16; GM-17; GM-41; GM-43; GM-44; OFR 75-2; OFR 76-4; OFR 76-17; OFR 76-24; OFR 76-29; OFR 92-7

Waste disposal – GM-19; OFR 75-2; OFR 76-5; OFR 76-7; OFR 76-25; OFR 76-30

Feasibility Studies – OFR 85-3

Ferry County

Bibliography – OFR 88-2

Geology – B 1; B 16; GM-32; GM-39; OFR 75-3; OFR 85-4; OFR 90-10; OFR 90-16; OFR 91-4

Geophysics and geophysical maps – RI 20

Maps, geologic – B 1; B 16; B 51; GM-32; GM-39; OFR 75-3; OFR 90-10; OFR 90-16; OFR 91-4

Maps, topographic – TM-2

Mineral resources – B 1; B 16; B 51; OFR 90-18

Forest soils and slope stability –

OFR 91-7; OFR 95-1; OFR 99-2

Franklin County

Geology – B 71; GM-38; GM-45; IC 90; OFR 23-1; OFR 79-2; OFR 79-13; OFR 94-3; OFR 94-8; OFR 94-13; OFR 94-14; RI (Geology) 1

Geothermal resources – OFR 83-11

Guidebooks – IC 90

Maps, geologic – GM-38; GM-45; OFR 23-1; OFR 79-2; OFR 79-13; OFR 94-3; OFR 94-8; OFR 94-13; OFR 94-14

Maps, topographic – TM-3

Mineral resources – OFR 25-0; RI (Geology) 1

Garfield County

Geology – GM-45; OFR 79-9; OFR 93-4; OFR 94-6; OFR 96-5

Maps, geologic – GM-45; OFR 79-9; OFR 93-4; OFR 94-6; OFR 96-5

Maps, topographic – TM-3

Geochronology – OFR 74-1; OFR 83-13; OFR 89-3; OFR 92-6

Geography – B 12; B 17

Geologic Hazards – GM-16; IC 47; IC 58; OFR 73-5; OFR 73-6; OFR 76-0

(*see also Earthquakes and Seismology; Landslides and Slope Stability; Liquefaction; Tsunamis*)

Geomorphology – IC 41; OFR 75-8; RI 29

Geophysics

Gravity surveys – GM-11; GM-27; IC 59; OFR 75-5; OFR 79-6; OFR 81-4; OFR 83-1; OFR 83-4; OFR 84-3

Magnetic surveys – OFR 85-5; RI 20

Seismic surveys – OFR 91-5

Geothermal Resources

General works – GM-25; Geothermal Packet; OFR 72-1; OFR 80-7; OFR 80-9; OFR 80-10; OFR 80-11; OFR 81-3; OFR 81-8; OFR 82-2; OFR 82-3; OFR 83-7; OFR 83-12; OFR 84-1; OFR 84-2; OFR 85-6; OFR 94-11

Bibliographies – OFR 80-4; OFR 94-1

Cascade Range – IC 62; OFR 83-5; OFR 83-10; OFR 86-2; OFR 89-2

Columbia Basin – OFR 81-7; OFR 82-1; OFR 82-6; OFR 83-2; OFR 83-11; OFR 83-14; OFR 83-15

Ghost Towns – Collecting Packet

Glacial Geology – B 8; B 45

Gold – B 42; IC 57; Gold Packet

Grant County

Geology – B 71; GM-38; GM-39; GM-45; OFR 21-0; OFR 79-2; OFR 79-3; OFR 79-10; OFR 79-13; OFR 85-3; OFR 90-1; OFR 90-2; OFR 90-6; OFR 94-13; OFR 94-14

Geothermal resources – OFR 83-11

Hydrology – B 14; OFR 83-11

Maps, geologic – GM-38; GM-39; GM-45; OFR 21-0; OFR 79-2; OFR 79-3; OFR 79-10; OFR 79-13; OFR 85-3; OFR 90-1; OFR 90-2; OFR 90-6; OFR 94-13; OFR 94-14

Maps, topographic – TM-2; TM-3

Mineral resources – OFR 79-2

Grays Harbor County

Geology – B 53; B 56; B 66; GM-13; GM-33; GM-34; OFR 87-8; OFR 87-9; OFR 99-2; OFR 2000-4

Geomorphology – RI 29

Maps, geologic – B 52; B 53; B 56; GM-13; GM-33; GM-34; OFR 87-8; OFR 87-9; OFR 2000-4

Maps, topographic – TM-1

Mineral resources – B 52; RI 23

Stratigraphy – B 53; B 62

Structures and tectonics – IC 51

Tsunami hazards – GM-49

Guidebooks – B 61; IC 38; IC 54; IC 86; IC 88; IC 90

Hydrology – AR 1901, Part V; B 14; B 26; IC 47; IC 61; OFR 75-1; OFR 75-2; OFR 83-2; OFR 83-14; OFR 98-8
(*see also Geothermal Resources*)

Igneous Petrology – B 60; OFR 83-13; RI 17

Iron – AR 1901, Part IV; B 27; IC 6; OFR 77-13; OFR 89-3; RI (Mines) 2; RI (Mines) 5; RI 8; RI 10; RI 11; RI 12

Island County

Geology – OFR 80-0

Maps, geologic – GM-12

Jefferson County

Engineering geology – OFR 76-4; OFR 76-5; OFR 76-7; OFR 76-17; OFR 76-24; OFR 76-25; OFR 76-29; OFR 76-30

Geology – B 66; B 72; GM-13; GM-24; OFR 73-3; OFR 76-3; OFR 76-20; OFR 76-21; OFR 76-26; OFR 2000-4

Landslides – OFR 76-15; OFR 76-18; OFR 76-22; OFR 76-27; OFR 91-7; OFR 99-2

Maps, geologic – B 52; GM-12; GM-13; GM-24; OFR 73-3; OFR 76-3; OFR 76-20; OFR 76-21; OFR 76-26; OFR 2000-4

■ SUBJECT INDEX ■

(Continued)

Jefferson County (continued)

- Mineral resources – B 52; OFR 76-16; OFR 76-19; OFR 76-23; OFR 76-28
- Paleontology – RI 31
- Stratigraphy – RI 31

King County

- Bibliography – IC 61
- Geology – B 63; GM-1; GM-2; GM-14; GM-34; IC 38; OFR 73-3; OFR 79-2; OFR 84-3; OFR 84-4; OFR 87-3
- Geologic hazards – GM-41
- Geophysics – OFR 84-3
- Guidebooks – IC 38
- Landslides and subsidence – IC 52; OFR 76-0
- Liquefaction – GM-43; OFR 92-7
- Maps, geologic – B 3; B 52; B 58; B 63; GM-1; GM-2; GM-12; GM-14; GM-34; OFR 73-3; OFR 76-6; OFR 79-2; OFR 84-3; OFR 84-4; OFR 87-3
- Maps, geophysical – OFR 84-3
- Maps, topographic – TM-1
- Mineral resources – B 3; B 52; B 63; OFR 83-8; OFR 83-8, Addendum; OFR 83-17; OFR 84-3; OFR 84-4; OFR 84-6; OFR 90-18; OFR 94-7
- Petrology – OFR 76-6
- Stratigraphy – RI 21; OFR 84-4

Kitsap County

- Geology – OFR 76-2
- Landslides – OFR 75-7
- Maps, geologic – GM-12; OFR 75-7; OFR 76-2

Kittitas County

- Geology – GM-28; GM-34; GM-45; IC 38; IC 54; OFR 75-8; OFR 79-2; OFR 79-14; OFR 79-15; OFR 80-1; OFR 83-9; OFR 86-4; OFR 88-5; OFR 92-3; OFR 93-3; OFR 94-12; OFR 94-13; OFR 99-4
- Guidebooks – IC 38; IC 54
- Maps, geologic – B 9; B 52; B 58; GM-28; GM-34; GM-45; OFR 76-6; OFR 79-2; OFR 79-14; OFR 79-15; OFR 80-1; OFR 83-9; OFR 86-4; OFR 88-5; OFR 92-3; OFR 93-3; OFR 94-12; OFR 94-13; OFR 99-4; RI 11; RI 12
- Maps, topographic – TM-1; TM-3

- Mineral resources – B 9; B 52; RI (Mines) 3; RI (Mines) 5; RI 11; RI 12; OFR 78-1; OFR 79-2; OFR 80-1; OFR 83-8; OFR 83-8, Addendum; OFR 83-9; OFR 84-6; OFR 90-18; OFR 94-7

- Structures and tectonics – OFR 88-5

Klickitat County

- Geology – GM-3; GM-34; GM-35; GM-36; GM-37; GM-45; OFR 75-13; OFR 79-12; OFR 79-15; OFR 86-3; OFR 87-5; OFR 87-6; OFR 87-13; OFR 87-14; OFR 87-15; revised; OFR 94-8; OFR 94-9; OFR 94-10

Geothermal resources – OFR 86-2

- Maps, geologic – GM-3; GM-34; GM-35; GM-36; GM-37; GM-45; IC 62; OFR 75-13; OFR 79-12; OFR 79-15; OFR 86-3; OFR 87-5; OFR 87-6; OFR 87-13; OFR 87-14; OFR 87-15; OFR 87-15, revised; OFR 94-8; OFR 94-9; OFR 94-10

Maps, topographic – TM-1; TM-3

Mineral resources – OFR 74-2

Land Use Planning – IC 47

Landslides and Slope Stability

- Bibliography – OFR 83-3; OFR 88-1; OFR 98-3
- Clallam County – OFR 99-2
- Clark County – OFR 75-10
- Cowlitz County – OFR 73-2
- Grays Harbor County – OFR 99-2
- Jefferson County – OFR 76-15; OFR 76-18; OFR 76-22; OFR 76-27; OFR 91-7; OFR 99-2
- King County – IC 52

Kitsap County – OFR 75-7

- Lewis County – OFR 78-2; OFR 79-16; OFR 95-1

Mason County – OFR 75-4

Pierce County – GM-18

Puget Lowland – IC 47

- Thurston County – GM-15; OFR 79-16; OFR 96-3

Yakima County – OFR 77-2

Lead – B 31; B 61; B 70; OFR 69-2; OFR 76-31

Lewis County

- Geology – B 43; GM-34; OFR 73-3; OFR 73-4; OFR 75-13; OFR 79-2; OFR 80-8; OFR 85-2; OFR 85-3; OFR 87-2; OFR 87-4; OFR 87-5; OFR 87-8; OFR 87-11; OFR 87-16; OFR 95-1; RI 3; RI (Mines) 6

Geothermal resources – OFR 86-2

- Landslides – OFR 78-2; OFR 79-16; OFR 95-1

- Maps, geologic – B 19; B 43; GM-12; GM-34; OFR 73-3; OFR 73-4; OFR 75-13; OFR 79-2; OFR 79-16; OFR 80-8; OFR 85-2; OFR 85-3; OFR 87-2; OFR 87-4; OFR 87-5; OFR 87-8; OFR 87-11; OFR 87-16; OFR 95-1; RI 3

Maps, topographic – TM-1

- Mineral resources – B 19; IC 60; OFR 77-4; OFR 83-8; OFR 83-8, Addendum; OFR 84-6; OFR 94-7; RI (Mines) 6
- Stratigraphy – B 43

Limestone – B 48; B 52; OFR 76-14; OFR 77-12

Lincoln County

- Geology – GM-39; OFR 79-10; OFR 79-11; OFR 85-3; OFR 90-2; OFR 90-7; OFR 90-15; OFR 90-17

Geothermal resources – OFR 83-11

- Maps, geologic – GM-39; OFR 79-10; OFR 79-11; OFR 85-3; OFR 90-7; OFR 90-15; OFR 90-17

Maps, topographic – TM-2

Mineral resources – RI 1

Liquefaction – GM-41; GM-43; GM-44; GM-47; OFR 92-7; RI 32

Magnesite and Magnesium – B 25; RI (Geology) 5; RI (Geology) 7

Magnetite – RI 14

Manganese – RI (Mines) 1; RI (Mines) 7

Maps – Geologic

- General – B 48; Geologic Map, 1936; Geologic Map, 1961; GM-34; GM-39; OFR 80-2; OFR 81-1; Page-Size Geologic Map, 1992

- Adams County – GM-38; GM-45; OFR 79-10; OFR 79-11; OFR 79-13; OFR 90-2; OFR 90-7; OFR 94-13; OFR 94-14

- Asotin County – GM-31; GM-40; GM-45; RI 27; OFR 79-9; OFR 93-4; OFR 94-6

- Benton County – GM-45; OFR 79-2; OFR 79-8; OFR 79-13; OFR 94-8; OFR 94-9; OFR 94-13

- Bibliography – IC 68; IC 70; IC 73; IC 77; IC 80; OFR 69-0; OFR 78-3; OFR 79-5; OFR 83-6; OFR 89-1; OFR 90-3; OFR 91-1; OFR 92-1; OFR 92-8; OFR 93-1; OFR 94-2; OFR 95-2; OFR 96-1; OFR 98-1; OFR 99-1

- Cascade Range – OFR 73-3; OFR 75-13; OFR 90-19

- Chelan County – B 6; B 75; GM-39; GM-46; OFR 73-6; OFR 75-6; OFR 79-14; OFR 87-16; OFR 87-17; OFR 88-5; OFR 90-6; OFR 90-9; OFR 95-3; RI 10; RI 11; RI 12; RI 17

- Clallam County – GM-24; OFR 79-17; OFR 79-18; OFR 79-19; OFR 79-20; OFR 98-7; OFR 2000-4; OFR 2000-7

■ SUBJECT INDEX ■

(Continued)

Maps – Geologic (continued)

Clark County – GM-34; OFR 87-4; OFR 87-10
Columbia Basin – GM-45; OFR 94-13; OFR 94-14
Columbia County – GM-45; OFR 79-9; OFR 93-4; OFR 94-3; OFR 94-6; OFR 94-14
Cowlitz County – B 19; B 43; B 54; GM-34; OFR 87-2; OFR 87-4; OFR 87-10
Douglas County – B 75; GM-39; OFR 79-7; OFR 79-10; OFR 79-14; OFR 88-5; OFR 90-2; OFR 90-1; OFR 90-6; OFR 90-12
Ferry County – B 1; B 16; GM-32; GM-39; OFR 75-3; OFR 90-10; OFR 90-15; OFR 90-16; OFR 91-4
Franklin County – GM-38; GM-45; OFR 79-13; OFR 94-3; OFR 94-8; OFR 94-13; OFR 94-14
Garfield County – GM-45; OFR 79-9; OFR 93-4; OFR 94-6
Grant County – GM-38; GM-39; GM-45; OFR 21-0; OFR 79-2; OFR 79-3; OFR 79-10; OFR 79-13; OFR 85-3; OFR 90-1; OFR 90-2; OFR 90-6; OFR 90-15; OFR 94-13; OFR 94-14
Grays Harbor County – B 53; B 56; GM-13; GM-33; GM-34; OFR 87-8; OFR 87-9; OFR 2000-4
Jefferson County – GM-13; GM-24; OFR 76-3; OFR 76-20; OFR 76-21; OFR 76-26; OFR 2000-4
King County – B 63; GM-1; GM-2; GM-14; GM-34; OFR 84-3; OFR 84-4; OFR 87-3
Kittitas County – B 9; GM-28; GM-34; GM-45; OFR 79-2; OFR 79-14; OFR 79-15; OFR 80-1; OFR 83-9; OFR 88-5; OFR 86-4; OFR 92-3; OFR 94-12; OFR 94-13; OFR 99-4; RI 11; RI 12
Klickitat County – GM-3; GM-34; GM-35; GM-36; GM-37; GM-45; OFR 79-12; OFR 79-15; OFR 86-3; OFR 87-6; OFR 87-13; OFR 87-14; OFR 87-15; OFR 94-9; OFR 94-10
Lewis County – B 19; B 43; GM-34; OFR 80-8; OFR 85-2; OFR 85-3; OFR 87-2; OFR 87-4; OFR 87-5; OFR 87-8; OFR 87-11; OFR 87-16; OFR 95-1
Lincoln County – GM-39; OFR 79-10; OFR 79-11; OFR 85-3; OFR 90-1; OFR 90-2; OFR 90-7; OFR 90-15; OFR 90-17
Mason County – B 53; GM-34; OFR 76-2; OFR 87-3; OFR 87-9

Offshore areas – OFR 85-1; OFR 87-1
Okanogan County – B 5; B 39; B 64; B 68; B 73; B 74; GM-39; OFR 79-7; OFR 87-17; RI 8; RI 14; OFR 90-5; OFR 90-6; OFR 90-9; OFR 90-10; OFR 90-11; OFR 90-12; OFR 90-15; OFR 90-16; OFR 95-3
Pacific County – GM-4; GM-34; OFR 87-2; OFR 87-8
Pend Oreille County – B 31; B 40; GM-7; GM-8; GM-9; GM-10; GM-39; OFR 88-3; OFR 90-13; OFR 90-14; RI 30
Pierce County – GM-34; OFR 75-2; OFR 76-9; OFR 77-9; OFR 85-3; OFR 87-3; OFR 87-11; OFR 87-16
San Juan County – OFR 96-7; OFR 2000-5
Skagit County – B 29; GM-23; OFR 76-1; OFR 76-10; OFR 90-5; OFR 98-8; OFR 99-3; OFR 2000-5; OFR 2000-6
Skamania County – B 60; GM-34; OFR 79-12; OFR 83-5; OFR 87-4; OFR 87-5; OFR 87-6; OFR 87-10; RI (Geology) 3
Snohomish County – B 7; B 36; GM-14; GM-20; OFR 73-1; OFR 76-10; OFR 95-3
Spokane County – GM-6; GM-9; GM-10; GM-39; OFR 79-11; OFR 90-7; OFR 90-14; OFR 90-17; OFR 97-3; OFR 98-6; OFR 99-6
Stevens County – B 20; B 25; B 31; B 34; GM-5; GM-6; GM-8; GM-9; GM-32; GM-39; OFR 90-10; OFR 69-1; OFR 76-8; OFR 79-11; OFR 80-3; OFR 85-7; OFR 88-3; OFR 90-13; OFR 90-14; OFR 90-15; OFR 90-16; OFR 90-17; OFR 91-4; OFR 91-6; RI (Geology) 5; RI 14; RI 30
Thurston County – B 19; GM-34; OFR 85-3; OFR 87-3; OFR 87-8; OFR 87-9; OFR 87-11
Wahkiakum County – B 43; B 54; GM-4; GM-34; OFR 87-2
Walla Walla County – GM-45; OFR 79-13; OFR 94-3; OFR 94-14
Whatcom County – B 28; B 50; B 57; OFR 75-9; OFR 77-6; OFR 90-5; OFR 97-2; OFR 97-4; OFR 98-5; OFR 2000-5
Whitman County – GM-26; GM-31; GM-45; OFR 79-9; OFR 79-11; OFR 90-7; OFR 94-6; OFR 94-14

Yakima County – GM-3; GM-28; GM-29; GM-34; GM-35; GM-36; GM-37; GM-45; OFR 76-11; OFR 77-7; OFR 77-8; OFR 79-2; OFR 79-3; OFR 79-13; OFR 79-15; OFR 80-8; OFR 82-6; OFR 85-2; OFR 86-3; OFR 86-4; OFR 87-5; OFR 88-5; OFR 92-3; OFR 93-3; OFR 94-8; OFR 94-10; OFR 94-12; OFR 94-13

Maps – Geophysical

Bibliography – IC 73; IC 77; OFR 83-6; OFR 89-1; OFR 90-3; OFR 91-1; OFR 92-1; OFR 92-8; OFR 93-1; OFR 94-2; OFR 95-2; OFR 96-1; OFR 98-1; OFR 99-1

Gravity – GM-11; GM-27; OFR 75-5; OFR 79-6; OFR 81-4; OFR 83-4; OFR 84-3

Magnetic – RI 20

Seismic – OFR 91-5

Maps – Hazards – GM-42; GM-47; GM-49

Maps – Mines – Directories – OFR 83-8; OFR 83-8, Addendum; OFR 94-7

Maps – Topographic – TM-1; TM-2; TM-3

Marine Geology – OFR 85-1; OFR 86-1; OFR 87-1; OFR 87-12; OFR 91-5

Mason County

Geology – B 53; GM-34; OFR 76-2; OFR 87-3; OFR 87-9

Landslides – OFR 75-4

Maps, geologic – B 52; B 53; GM-12; GM-34; OFR 76-2; OFR 87-3; OFR 87-9

Maps, topographic – TM-1

Mineral resources – B 52; GM-21

Stratigraphy – B 53

Structures and tectonics – OFR 76-12

Mercury – OFR 83-10; RI (Mines) 6

Mima Mounds – RI 29

Mineral Collecting – Collecting Packet; Gold Packet

Mineral Prospecting – IC 31; IC 57

Mineral Resources

General works – AR 1891; AR 1892; B 11; B 21; B 30; GM-22; IC 22R; IC 45

Bibliography – B 35; B 46; B 59; B 76; B 79; B 81; IC 70; IC 80; OFR 84-5; OFR 84-7; OFR 90-8; OFR 92-4; OFR 93-2; OFR 94-15; OFR 94-16; OFR 97-1

Metallic – AR 1901, Part II; B 23; B 37, Part II; IC 4; OFR 90-18

Nonmetallic – AR 1901, Part III; B 33; B 37, Part I; B 37, Part I, 2nd ed.

■ SUBJECT INDEX ■

(Continued)

Mineral Resources (*continued*)

(see also specific commodities, for example, **Barite, Gold, Oil and Gas, etc.**)

Counties and areas:

- Asotin County – OFR 81-6; RI 27
- Benton County – OFR 25-0; OFR 79-2; RI (Geology) 1
- Cascade Range – B 58; OFR 83-16
- Chelan County – B 6; OFR 90-18; RI (Mines) 3; RI 9; RI 10; RI 11; RI 12; RI 17
- Clark County – IC 60; OFR 75-11
- Cowlitz County – B 19; B 54; IC 60; OFR 77-5; OFR 83-8; OFR 84-6
- Ferry County – B 1; B 16; B 51; OFR 88-2; OFR 90-18
- Franklin County – OFR 25-0; RI (Geology) 1
- Grant County – OFR 79-2
- Grays Harbor County – RI 23
- Jefferson County – OFR 76-16; OFR 76-19; OFR 76-23; OFR 76-28
- King County – B 3; B 63; IC 61; OFR 83-8; OFR 83-8, Addendum; OFR 83-17; OFR 84-3; OFR 84-4; OFR 84-6; OFR 90-18; OFR 94-7
- Kittitas County – B 9; OFR 78-1; OFR 79-2; OFR 80-1; OFR 83-8; OFR 83-8, Addendum; OFR 83-9; OFR 84-6; OFR 90-18; OFR 94-7; RI (Mines) 3; RI (Mines) 5; RI 11; RI 12
- Klickitat County – OFR 74-2
- Lewis County – B 19; IC 60; OFR 77-4; OFR 83-8; OFR 83-8, Addendum; OFR 84-6; OFR 94-7; RI (Mines) 6
- Lincoln County – RI 13
- Mason County – GM-21
- Okanogan County – B 5; B 39; B 51; B 64; B 65; B 73; B 74; IC 49; OFR 90-18; RI 8; RI 13; RI 14
- Olympic Peninsula – RI (Mines) 1; RI (Mines) 7; RI 26
- Pend Oreille County – B 31; B 40; B 51; B 61; OFR 76-14; OFR 77-12; OFR 90-18
- Pierce County – B 10; OFR 75-2; OFR 79-1; OFR 79-4; OFR 83-8; OFR 83-8, Addendum; OFR 84-6; OFR 94-7
- San Juan County – IC 91

Skagit County – B 29; IC 91; OFR 78-5; OFR 83-8; OFR 84-6; OFR 94-7

Skamania County – IC 60; RI (Geology) 3

Snohomish County – B 7; B 36; OFR 90-18
RI (Geology) 6; RI (Geology) 6, supp.

Spokane County – RI 28

Stevens County – B 20; B 25; B 31; B 34; B 48; B 51; B 61; B 70; OFR 69-1; OFR 76-14; OFR 77-12; OFR 90-18; RI (Geology) 5; RI (Geology) 7; RI 13; RI 14; RI 28

Thurston County – B 19; OFR 83-8; OFR 84-6; OFR 94-7

Wahkiakum County – B 54

Whatcom County – B 28; B 50; B 57; IC 91; OFR 75-9; OFR 77-3; OFR 83-8; OFR 83-8, Addendum; OFR 84-6; OFR 90-18; OFR 94-7; RI (Geology) 2

Yakima County – OFR 79-2; RI (Mines) 3

Mining and the Environment – OFR 94-16

Mining Directories – IC 2; IC 3; IC 5; IC 7; IC 8; IC 9; IC 11; IC 12; IC 13; IC 16; IC 17; IC 18; IC 19; IC 20; IC 21; IC 23; IC 24; IC 25; IC 27; IC 28; IC 34; IC 35; IC 37; IC 42; IC 43; IC 44; IC 46; IC 48; IC 63; IC 69; IC 87; OFR 82-4; OFR 87-7

Mining History – IC 74; OFR 79-1

Mining Industry – IC 39; IC 74

Mining Law and Mining Leases – B 41; B 67; GM-30; IC 1; IC 36; OFR 92-5; OFR 94-4; OFR 2000-3; Surface Mining Packet

Mining Practices – OFR 96-2

Molybdenum – OFR 69-2; RI 18; RI 28

Mount Adams – OFR 81-5

Mount Baker – OFR 81-5

Mount Rainier – OFR 75-5; OFR 81-5

Mount St. Helens – IC 71; IC 76; IC 88;

Mount St. Helens Packet; OFR 80-12; OFR 81-5; OFR 83-10; OFR 87-4; RI 24

Nickel – OFR 75-14

Oil and Gas – IC 15; IC 15, supp.; IC 29; IC 67; IC 67R; IC 75; OFR 91-2; Oil and Gas Packet; RI (Geology) 2; RI (Geology) 4; RI 26

Okanogan County

Geology – B 5; B 64; B 68; B 73; B 74; GM-39; GM-46; OFR 79-7; OFR 87-17; OFR 90-5; OFR 90-6; OFR 90-9; OFR 90-10; OFR 90-11; OFR 90-12; OFR 90-15; OFR 90-16; OFR 90-19; OFR 95-3

Geophysics and geophysical maps – RI 20

Hydrology – OFR 75-1

Maps, geologic – B 5; B 39; B 51; B 64; B 65; B 68; B 73; B 74; GM-39; GM-46; IC 49; OFR 75-1; OFR 79-7; OFR 87-17; OFR 90-5; OFR 90-6; OFR 90-9; OFR 90-10; OFR 90-11; OFR 90-12; OFR 90-15; OFR 90-16; OFR 90-19; OFR 95-3; RI 8; RI 14

Maps, topographic – TM-2

Mineral resources – B 5; B 39; B 51; B 64; B 65; B 73; B 74; IC 49; OFR 90-18; RI 8; RI 13; RI 14

Sediments and stratigraphy – B 65; B 74

Olympic Peninsula

Geochronology – OFR 74-1; OFR 92-6
Mineral resources – RI (Mines) 1; RI (Mines) 7

Stratigraphy – OFR 68-1; RI 26

Oregon

Mining practices – OFR 96-2

Pacific County

Geology – GM-4; GM-34; OFR 87-2; OFR 87-8

Maps, geologic – GM-4; GM-34; OFR 87-2; OFR 87-8

Maps, topographic – TM-1

Tsunami hazards – GM-49

Paleontology – B 15; Collecting Packet; IC 33; RI 31

(see also **Stratigraphy**)

Peat – B 44

Pend Oreille County

Geology – B 40; GM-7; GM-8; GM-9; GM-10; GM-39; OFR 88-3; OFR 90-13; OFR 90-14

Guidebooks – B 61

Maps, geologic – B 31; B 40; B 51; GM-7; GM-8; GM-9; GM-10; GM-39; OFR 76-14; OFR 88-3; OFR 90-13; OFR 90-14

Maps, topographic – TM-2

Mineral resources – B 31; B 40; B 51; B 61; OFR 90-18

Petrology – OFR 76-13; OFR 76-14; OFR 77-12

Stratigraphy – OFR 88-3; RI 30

■ SUBJECT INDEX ■

(Continued)

Pierce County

- Engineering geology and geologic hazards – GM-17; GM-19; OFR 75-2
- Geology – B 18; GM-34; OFR 73-3; OFR 75-2; OFR 76-9; OFR 77-9; OFR 79-2; OFR 85-3; OFR 87-3; OFR 87-11; OFR 87-16
- Geophysics and geophysical maps – OFR 75-5
- Landslides – GM-18
- Liquefaction – GM-43; GM-44
- Maps, geologic – B 52; GM-12; GM-34; OFR 73-3; OFR 75-2; OFR 76-9; OFR 77-9; OFR 79-2; OFR 79-16; OFR 85-3; OFR 87-3; OFR 87-11; OFR 87-16
- Maps, topographic – TM-1
- Mineral resources – B 10; B 52; OFR 75-2; OFR 79-1; OFR 79-4; OFR 83-8; OFR 83-8, Addendum; OFR 84-6; OFR 94-7
- Stratigraphy – OFR 90-4

Public Lands – GM-30

Puget Lowland

- Earthquakes – IC 47; IC 81; IC 85
- Geologic hazards – IC 47; OFR 92-7
- Geophysics – OFR 85-5
- Glacial geology and glacial sediments – B 8; GM-12; OFR 85-5
- Landslides – IC 47

Pumice – RI 15

Saline Lakes – B 49

San Juan County

- Geology – OFR 96-7; OFR 2000-5
- Maps, geologic – B 52; GM-12; OFR 96-7; OFR 2000-5
- Mineral resources – B 52; IC 91
- Surficial sediment – OFR 96-7

Sand and Gravel – B 22; IC 91; RI 23; OFR 74-2; OFR 75-11; OFR 92-5; OFR 94-4

Sediments and Sedimentary Petrology

- Cascade Range – OFR 78-0
- Columbia Basin – OFR 79-3
- Northeastern Washington – B 65; B 70; OFR 76-13; OFR 76-14; OFR 77-12
- Puget Lowland – GM-12; IC 47; OFR 80-0; OFR 85-5

Shorelines – GM-49; OFR 77-1

Silver – B 69; OFR 75-14

Skagit County

- Geology – B 68; GM-23; OFR 76-1; OFR 76-10; OFR 90-5; OFR 90-19; OFR 98-5; OFR 98-8; OFR 99-3; OFR 2000-1; OFR 2000-5; OFR 2000-6

- Maps, geologic – B 29; B 52; B 58; B 68; GM-12; GM-23; OFR 76-1; OFR 76-10; OFR 90-5; OFR 90-19; OFR 98-5; OFR 98-8; OFR 99-3; OFR 2000-5; OFR 2000-6

- Mineral resources – B 29; B 52; IC 91; OFR 78-5; OFR 83-8; OFR 84-6; OFR 94-7

- Stratigraphy – OFR 99-3

Skamania County

- Geochronology – OFR 89-3
- Geology – B 60; GM-34; IC 88; OFR 75-13; OFR 79-12; OFR 83-5; OFR 87-4; OFR 87-5; OFR 87-6; OFR 87-10; RI (Geology) 3
- Geophysics and geophysical maps – OFR 79-6

- Geothermal resources – IC 62; OFR 83-5; OFR 83-10; OFR 86-2

- Maps, Geologic – B 58; B 60; GM-34; IC 62; OFR 75-13; OFR 79-12; OFR 83-5; OFR 87-4; OFR 87-5; OFR 87-6; OFR 87-10; RI (Geology) 3

- Maps, topographic – TM-1

- Mineral resources – IC 60; RI (Geology) 3

- Petrology – OFR 89-3

- Stratigraphy – OFR 89-3

- Volcanism – B 60

Snohomish County

- Geology – B 7; B 36; GM-14; GM-20; IC 38; OFR 73-1; OFR 73-3; OFR 76-10; OFR 95-3

- Guidebooks – IC 38

- Maps, geologic – B 7; B 36; B 52; B 58; GM-12; GM-14; GM-20; OFR 73-1; OFR 73-3; OFR 76-6; OFR 76-10; OFR 95-3

- Mineral resources – B 7; B 36; B 52; OFR 90-18; RI (Geology) 6; RI (Geology) 6, supp.

- Petrology – OFR 76-6

Spokane County

- Geology – GM-6; GM-9; GM-10; GM-39; OFR 79-11; OFR 90-7; OFR 90-14; OFR 90-17; OFR 97-3; OFR 98-6; OFR 99-6

- Maps, geologic – GM-6; GM-9; GM-10; GM-39; OFR 79-11; OFR 90-7; OFR 90-14; OFR 90-17; OFR 97-3; OFR 98-6; OFR 99-6

- Maps, topographic – TM-2

- Mineral resources – RI 28

Stevens County

- Geology – B 25; GM-32; GM-39; GM-5; GM-6; GM-8; GM-9; OFR 69-1; OFR 76-8; OFR 79-11; OFR 80-3; OFR 85-4; OFR 85-7; OFR 88-3; OFR 90-10; OFR 90-13; OFR 90-14; OFR 90-15; OFR 90-16; OFR 90-17; OFR 91-4; OFR 91-6; RI 25

- Guidebooks – B 61

- Maps, geologic – B 20; B 25; B 31; B 34; B 48; B 51; GM-32; GM-39; GM-5; GM-6; GM-8; GM-9; OFR 69-1; OFR 76-8; OFR 76-14; OFR 79-11; OFR 80-3; OFR 85-7; OFR 88-3; OFR 90-10; OFR 90-13; OFR 90-14; OFR 90-15; OFR 90-16; OFR 90-17; OFR 91-4; OFR 91-6; RI (Geology) 5; RI 14

- Maps, topographic – TM-2

- Mineral resources – B 20; B 25; B 31; B 34; B 51; B 61; B 70; OFR 69-1; OFR 90-18; RI (Geology) 5; RI (Geology) 7; RI 13; RI 14; RI 28

- Petrology – B 70; OFR 76-13; OFR 76-14; OFR 77-12

- Stratigraphy – RI 30

- Structures and tectonics – RI 25

Strait of Juan de Fuca – OFR 87-1

Stratigraphic Correlation – RI 26; OFR 68-1

Stratigraphic Nomenclature – OFR 90-4

Stratigraphy

- General work – B 13; B 15; OFR 80-5

- Cascade Range – OFR 90-19

- Columbia Basin – RI 19; RI 27

- Northeastern Washington – OFR 88-3

- Olympic Peninsula – B 53; B 62; OFR 68-1; RI 26; RI 31

- Puget Lowland – OFR 80-0; OFR 84-4; OFR 90-4; OFR 98-8; RI 21

- Southwestern Washington – B 43; B 53; RI 26

Stream Sediments – B 74; OFR 69-2; OFR 91-7

Structural Geology

- General works – OFR 80-2

- Cascade Range – OFR 81-2; OFR 90-19

- Columbia Basin – OFR 81-1; OFR 88-5; RI 27

- Northeastern Washington – RI 25

- Olympic Peninsula – IC 51

- Puget Lowland – OFR 76-12; OFR 77-6; OFR 80-0

- Southwestern Washington – OFR 81-1

Study Guides – OFR 96-4

Superconducting Super Collider – OFR 85-3

■ SUBJECT INDEX ■

(Continued)

Thesis Indices – IC 70; IC 80; OFR 69-0; OFR 89-1; OFR 90-3; OFR 91-1; OFR 92-1; OFR 93-1; OFR 94-2; OFR 95-2; OFR 96-1; OFR 98-1; OFR 99-1

Thurston County

Geology – GM-34; OFR 73-3; OFR 85-3; OFR 87-3; OFR 87-8; OFR 87-9; OFR 87-11
Landslides and soil mechanics – GM-15; GM-16; GM-47; OFR 79-16; OFR 96-3
Maps, geologic – B 19; GM-12; GM-34; OFR 73-3; OFR 85-3; OFR 87-3; OFR 87-8; OFR 87-9; OFR 87-11; OFR 79-16
Maps, topographic – TM-1
Mima mounds – RI 29
Mineral resources – B 19; OFR 83-8; OFR 84-6; OFR 94-7

Tin – RI 28

Topographic Maps – TM-1; TM-2

Tsunamis – GM-49; OFR 94-5

Tungsten – B 34; RI 28

Uranium – IC 26; OFR 79-2

Videography – IC 76

Volcanism and Volcanic Ash – B 60; IC 41; Mount St. Helens Packet; OFR 74-1; OFR 81-5; RI 15

Wahkiakum County

Geology – B 43; B 54; GM-4; GM-34; OFR 87-2
Maps, geologic – B 43; B 54; GM-4; GM-34; OFR 87-2

Maps, topographic – TM-1
Mineral resources – B 54
Stratigraphy – B 43

Walla Walla County

Geology – GM-45; IC 90; OFR 79-13; OFR 94-3; OFR 94-14
Maps, geologic – GM-45; OFR 79-13; OFR 94-3; OFR 94-14
Maps, topographic – TM-3

Whatcom County

Geology – B 50; B 57; B 68; GM-23; OFR 75-9; OFR 90-5; OFR 90-19; OFR 97-2; OFR 97-4; OFR 98-5; OFR 2000-5
Guidebooks – IC 90
Maps, geologic – B 28; B 50; B 52; B 57; B 58; B 68; GM-12; GM-23; OFR 75-9; OFR 77-6; OFR 90-5; OFR 90-19; OFR 97-2; OFR 98-5; OFR 2000-5

Mineral resources – B 28; B 50; B 52; B 57; IC 91; OFR 75-9; OFR 77-3; OFR 83-8; OFR 83-8, Addendum; OFR 84-6; OFR 90-18; OFR 94-7; RI (Geology) 2

Shorelines – OFR 77-1
Stratigraphy – OFR 97-4
Structures and tectonics – OFR 77-6

Whitman County

Geology – GM-26; GM-31; GM-45; OFR 79-9; OFR 79-11; OFR 90-7; OFR 94-6; OFR 94-14

Maps, geologic – GM-26; GM-31; GM-45; OFR 79-9; OFR 79-11; OFR 90-7; OFR 94-6; OFR 94-14
Maps, topographic – TM-3

Yakima County

Geology – GM-3; GM-28; GM-29; GM-34; GM-36; GM-37; GM-45; IC 54; OFR 75-13; OFR 76-11; OFR 77-7; OFR 77-8; OFR 79-2; OFR 79-3; OFR 79-13; OFR 79-15; OFR 80-8; OFR 82-6; OFR 85-2; OFR 86-3; OFR 86-4; OFR 87-5; OFR 87-16; OFR 88-5; OFR 92-3; OFR 93-3; OFR 94-8; OFR 94-10; OFR 94-12; OFR 94-13

Geothermal resources – OFR 81-7; OFR 82-6; OFR 86-2

Guidebooks – IC 54

Hydrology – OFR 83-2

Landslides – OFR 77-2

Maps, geologic – GM-3; GM-28; GM-29; GM-34; GM-35; GM-36; GM-37; GM-45; IC 62; OFR 75-13; OFR 76-11; OFR 77-7; OFR 77-8; OFR 79-2; OFR 79-3; OFR 79-13; OFR 79-15; OFR 80-8; OFR 82-6; OFR 85-2; OFR 86-3; OFR 86-4; OFR 87-5; OFR 87-16; OFR 88-5; OFR 92-3; OFR 93-3; OFR 94-8; OFR 94-10; OFR 94-12; OFR 94-13

Maps, topographic – TM-1; TM-3

Mineral resources – RI (Mines) 3; OFR 79-2

Structures and tectonics – OFR 88-5

Zinc – B 61; B 70; OFR 69-2; OFR 76-31 ■

■ WASHINGTON GEOLOGY ARTICLE INDEX ■

The following is a list of selected major articles from back issues of *Washington Geology* (and its predecessor), 1973 to date. Most issues are available from our publications section and can be obtained free of charge from the Washington Division of Geology and Earth Resources, PO Box 47007, Olympia, WA 98504-7007. If a back issue is not on our shelves, we can copy it (upon request) for 25 cents per page. To cover our costs for postage and handling, we ask that you include a check or money order for \$1 made out to the Department of Natural Resources with each request for copies.

For a more complete list and index of *Washington Geology*, see the index issues: 1988, v. 16, no. 4; 1990, v. 18, no. 4; 1992, v. 20, no. 4; 1994, v. 22, no. 4; 1996, v. 24, no. 4; 1999, v. 27, no. 1.

WASHINGTON GEOLOGIC NEWSLETTER

1973

v. 1, no. 1, January

Moen, W. S., Washington metal mines, p. 3-4.

Moen, W. S., Meteorites, p. 4-5.

Schuster, J. E., Tower Rock—A south-western Washington landmark, p. 3-4.

Smith, Mackey, Coal mine subsidence investigation, p. 5-6.

v. 1, no. 2, April

Artim, E. R., Landslides—An expanding problem for the Puget Lowland, p. 1-3.

v. 1, no. 3, July

Carson, R. J., First known active fault in Washington, p. 1-2.

v. 1, no. 4, October

Schuster, J. E., Geothermal energy in Washington, p. 2-4.

1974

v. 2, no. 1, January

Moen, W. S., Washington's nonmetallic minerals, p. 1-3.

v. 2, no. 2, April

Othberg, Kurt, Earthquake investigations in Washington, p. 3-5

v. 2, no. 3, July

Carson, R. J.; Gryta, J. J., Jorsted Creek slide, Mason County, p. 1-2.

Schuster, J. E., Geothermal lease applications, p. 2-4.

v. 2, no. 4, October

Carson, R. J.; Wilson, J. R., Quaternary faulting on Dow Mountain, Mason County, p. 9-10.

Moen, W. S., Mining activities in Washington during 1974, p. 1-3.

1975

v. 3, no. 1, January

Moen, W. S., A summary of mineral exploration in Washington in 1974, p. 1-4.

v. 3, no. 2, April

Moen, W. S., The old mining camps of Washington, p. 1-5.

v. 3, no. 3, July

Rau, W. W., Oil and gas in Washington State, p. 5-7.

Washington Geologic Newsletter, Increased volcanic activity of Mount Baker, Washington, p. 1-5.

v. 3, no. 4, October

Artim, E. R., Application of geology to the building and real estate professions in the Puget Lowland metropolitan area, Washington, p. 1-9

Schuster, J. E., Geothermal activities in Washington, p. 12-13.

Vonheeder, E. R., Washington State coal resources, p. 9-12.

1976

v. 4, no. 1, January

Kimmel, Ralph, Oil and gas, p. 6-7.

Moen, W. S., Some developments in mineral exploration in Washington during 1975, p. 1-6.

Moen, W. S., Washington mineral production—1975, p. 8.

Schuster, J. E., Geothermal, p. 7.

Vonheeder, E. R., Coal, p. 6.

v. 4, no. 2, April

Artim, E. R., Fault capability, p. 4-5.

Rau, W. W., The Oil City story, p. 1-3.

Vonheeder, E. R., Coal key to energy independence, p. 3-4.

v. 4, no. 3, July

Carson, R. J., Pleistocene ash on the Olympic Peninsula, p. 7.

Vonheeder, E. R., In-situ combustion of coal as an alternative energy source, p. 1-4.

Vonheeder, E. R., Second in-situ gasification project at Hanna gives optimistic results, p. 4.

v. 4, no. 4, October

Lucas, J. M., Exploration for uranium in Washington during the bicentennial year, p. 1-3.

1977

v. 5, no. 1, January

Lucas, J. M., Washington State exploration roundup, 1976, p. 1-8.

Vonheeder, E. R., Coal exploration on state-administered lands in Whatcom and Skagit Counties during 1976, p. 11-17.

v. 5, no. 2, April

Zimmerman, Tom; Moen, W. S., Sand and gravel in Washington, p. 1-7.

v. 5, no. 3, July

Wurden, F. H.; Ford, D. M., Jackson Prairie Gas Storage Project, Chehalis, Washington, p. 1-5.

v. 5, no. 4, October

Moen, W. S., The mines of Washington—Their overlooked worth, p. 1-3.

Othberg, Kurt, Admiralty till (Pleistocene) or the rise and fall of a rock stratigraphic name, p. 5-6.

Schuster, J. E., Moses Coulee flash flood, p. 3-4.

1978

v. 6, no. 1, January

Milne, P. C., Metallic mineral exploration in Washington, 1977, p. 1-7.

Thorsen, G. W., Flash flood caused damage in Chelan County, p. 10-11.

Walker, C. W., Industrial minerals in Washington, 1977, p. 7-9.

v. 6, no. 2, April

Rigby, Jim; Tucker, Glenda, Basalt [nuclear] Waste Isolation Program, p. 1-2.

v. 6, no. 3, July

Livingston, V. E., Jr., Origin of the Grand Coulee and Dry Falls, p. 1-3.

v. 6, no. 4, October

Thorsen, G. W., Atlas series in progress on Washington coastal zone, p. 1-4.

1979

v. 7, no. 1, January

Milne, P. C., Metallic mineral exploration in Washington, 1978, p. 1-5.

Vonheeder, E. R., Nonmetallic and industrial minerals and energy exploration, p. 5-8.

v. 7, no. 2, April

Stoffel, K. L., Stratigraphy of pre-Fraser Quaternary sediments applied to the evaluation of a proposed major tectonic structure in Island County, Washington, p. 1-4.

■ WASHINGTON GEOLOGY ARTICLE INDEX ■

(Continued)

v. 7, no. 3, July

McFarland, C. R., History of oil and gas exploration in the state of Washington, p. 1-3.

v. 7, no. 4, October

Washington Geologic Newsletter, Gold in Washington, p. 1-6.

1980

v. 8, no. 1, January

Bloomquist, R. G., Utilization of Washington's geothermal energy resources, p. 7-9.

McFarland, C. R., Metallic and nonmetallic mineral exploration wrap-up, 1979, p. 1-6.

v. 8, no. 2, April

Washington Geologic Newsletter, Uranium in Washington, p. 1-5.

v. 8, no. 3, July

McLucas, Glenn, Petrology of current Mount St. Helens tephra, p. 7-13.

Rigby, J. G.; Korosec, M. A., Sequence of volcanic activity of Mount St. Helens, March 20–June 23, 1980, p. 1-6.

Washington Geologic Newsletter, Mount St. Helens ash fall distribution, p. 13-16.

Washington Geologic Newsletter, Toutle River receives extensive damage, p. 17-18.

v. 8, no. 4, October

Lasmanis, Raymond; Schasse, H. W., Washington's coal—Future development potential, p. 11-18.

McLucas, G. B., Cleanup and disposal of Mount St. Helens ash in eastern Washington, p. 1-7.

1981

v. 9, no. 1, January

Bunning, B. B., New developments in minerals and energy—Washington State, 1980, p. 1-6.

Thorsen, G. W.; Rue, R. L., High bank instead of high rise—An earth sheltered approach to medium density housing, p. 7-11.

v. 9, no. 2, April

Phillips, W. M.; Walsh, T. J., Coal geology of King County, Washington, p. 1-11.

Washington Geologic Newsletter, A possible geologic explanation for the wildcat drilling by Shell in Yakima Canyon, p. 11-14.

v. 9, no. 3, July

Fiksdal, A. J., Infiltration rates of undisturbed and disturbed Mount St. Helens tephra deposits, p. 1-3.

v. 9, no. 4, October

Logan, R. L., Some petrographic characteristics of pumice from the 1980 Mount St. Helens pyroclastic flows, p. 1-4.

1982

v. 10, no. 1, January

Vonheeder, E. R., Minerals and energy exploration activities in Washington, 1981, p. 1-8.

Walsh T. J.; Phillips, W. M., Coal rank and thermal maturation in King County, Washington, p. 9-18.

v. 10, no. 2, April

Livingston, V. E., Jr., High-alumina-bearing mineral deposits in Washington, p. 4-8.

McFarland, C. R., Oil and gas potential of the Northwest and 1981 drilling activities, p. 1-4.

v. 10, no. 3, July

Moen, W. S., The mineral industry of Washington—Highlights of its development, 1853–1980, p. 1-10.

v. 10, no. 4, October

Moen, W. S., The mineral industry of Washington—Highlights of its development, 1853–1980; Part 2, p. 1-8.

1983

v. 11, no. 1, January

Bunning, B. B., New developments in minerals and energy in Washington, 1982, p. 1-11.

v. 11, no. 2, April

Thorsen, G. W., West Beach silt—A late Pleistocene loess, central Puget Lowland, Washington, p. 1-4.

v. 11, no. 3, July

Bunning, B. B., The Wenatchee gold rush, p. 1-5.

v. 11, no. 4, October

Lasmanis, Raymond, Offshore metal deposits—Washington and Oregon, p. 1-2.

Lasmanis, Raymond, Rare minerals found in Stevens County, Washington, p. 2-6.

1984

v. 12, no. 1, January

Bunning, B. B., The Junction Reef gold prospect, Lincoln County, Washington, p. 17-18.

Bunning, B. B., Washington's mineral industry, 1983, p. 1-15.

Herdick, Melin; Bunning, B. B., Geology of the Gold Dike mine, Ferry County, Washington, p. 20-22

Walsh, T. J., Coal found on Whidbey Island, p. 15-17.

Walsh, T. J., Core samples available for study, p. 18-20.

v. 12, no. 2, April

Noson, L. L., Seismic summary, p. 2-4.

v. 12, no. 3, July

Schasse, H. W., Partial seam CRIP underground coal gasification field test at Centralia coal mine, p. 4-6.

Walsh, T. J.; LaSalata, F. V., Abandoned coal mine inventory, p. 1-4.

v. 12, no. 4, October

Pappajohn, S. P., Methane recovery from underground coalbeds, p. 11-16.

Rau, W. W., The Humptulips Formation—A new Eocene formation of southwest Washington, p. 1-5.

Stoffel, K. L.; Korosec, M. A., Low temperature geothermal resources of the Columbia Basin, eastern Washington, p. 5-11.

1985

v. 13, no. 1, January

Bunning, B. B., New developments in mining and mineral exploration in Washington, 1984, p. 1-13.

Schasse, H. W., Coal activity in Washington—1984, p. 14-15.

v. 13, no. 2, April

Logan, R. L., "Guidebook for developing a school earthquake safety program" to be available this summer, p. 3-7.

Noson, L. L., Plate tectonics and Washington earthquakes, p. 8-9.

Washington Geologic Newsletter, Vast amounts of ice and snow are atop Cascade volcanoes, p. 10-12.

v. 13, no. 3-4, October

Schasse, H. W., Abandoned coal mine inventory update, p. 4-5.

1986

v. 14, no. 1-2, January–April

Barnett, D. B.; Korosec, M. A., Geothermal exploratory drilling by the state of Washington in 1985, p. 21-28.

Bunning, B. B., High-calcium limestones tested for brightness, p. 31-33.

Joseph, N. L., High-calcium limestone, p. 29-31.

Joseph, N. L., Washington's mineral industry, 1985, p. 1-17.

Lasmanis, Raymond, Oil and gas activity in Washington State—1985, p. 19.

Schasse, H. W., Coal activity in Washington—1985, p. 18.

v. 14, no. 3, August

Lasmanis, Raymond, High-level nuclear waste repository concept—Deep geologic disposal, p. 3-9.

■ WASHINGTON GEOLOGY ARTICLE INDEX ■

(Continued)

Lingley, W. S., Jr., Twin River Oil and Gas, Inc., drilling near Port Angeles, p. 24-26.

Lingley, W. S., Jr.; Walsh, T. J., Issues relating to petroleum drilling near the proposed high-level nuclear waste repository at Hanford, p. 10-19.

Tanner, A. B., Indoor radon and its sources in the ground, p. 19-22.

Thorsen, G. W., Landslide dams—A potential geologic hazard, p. 22-24.

v. 14, no. 4, October

Joseph, N. L., Eocene flora and fauna unearthed at Republic, p. 3-5.

Joseph, N. L., The silica industry in Washington, p. 6-11.

Lasmanis, Raymond, Minerals in fractured basalt—An issue, p. 2, 11-12.

1987

v. 15, no. 1, April

Joseph, N. L., Washington's mineral industry, 1986, p. 3-21

Lasmanis, Raymond, Geologic hazards program, p. 2, 23-24.

Schasse, H. W., Coal activity in Washington, 1986, p. 21-23

v. 15, no. 2, May

Lasmanis, Raymond, Earthquake research in Washington—Evolving programs, p. 2, 27.

Tarr, A. C.; King, K. W., USGS begins seismic ground response experiments in Washington, p. 11-18.

Washington Geologic Newsletter, Federal earthquake risk reduction program for the Puget Sound area, p. 5-11.

Washington Geologic Newsletter, Geologic evidence for large earthquakes along the Pacific coast, p. 19-21.

Washington Geologic Newsletter, SLAR reveals geologic structures in the Pasco Basin, p. 22-23.

Washington Geologic Newsletter, Washington State Seismic Safety Commission recommendations, p. 4-5.

v. 15, no. 3, July

Lingley, W. S., Jr., Oil and gas exploration in Washington at its highest level in recent years, p. 12-14.

Thorsen, G. W., Soil bluffs + rain = slide hazards, p. 3-11.

v. 15, no. 4, October

Lasmanis, Raymond, Mount St. Helens Scientific Advisory Board, p. 3, 13-15.

Phillips, W. M., Geologic guide to the Monitor Ridge climbing route, Mount St. Helens, Washington, p. 3-13.

1988

v. 16, no. 1, February

Fox, K. F., Jr.; Rinehart, C. D., Okanogan gneiss dome—A metamorphic core complex in north-central Washington, p. 3-12.

Kaldenbach, Ginger, Reclaiming abandoned coal mines in Washington, p. 20-23.

Lasmanis, Raymond, Life cycle of a mineral property, p. 2, 12-13.

Schasse, H. W., Coal activity in Washington—1987, p. 20.

v. 16, no. 2, April

Joseph, N. L., The mineral industry in Washington, 1987, p. 3-19.

v. 16, no. 3, July

Kaler, K. L., Whale hunting on the Olympic Peninsula, p. 16-17.

Lasmanis, Raymond, Washington offshore mineral resources, p. 5-10.

Schasse, H. W., Coal exploration in Whatcom County, p. 11.

Walsh, T. J., Coal mine subsidence in Washington, p. 3-5.

v. 16, no. 4, October

INDEX ISSUE—1973–July 1988

Kaler, K. L., The Blue Lake rhinoceros, p. 3-8

Thorsen, G. W., Overview of earthquake-induced water waves in Washington and Oregon, p. 9-18

1989

v. 17, no. 1, March

Barnett, D. B., Geothermal drilling by the State of Washington in 1988, p. 33-34.

Joseph, N. L., Washington's mineral industry—1988, p. 3-21.

Palmer, S. P.; Lingley, W. S., Jr., Petroleum geology of the Washington continental margin, p. 22-30

Schasse, H. W., Coal activity in Washington—1988, p. 31-32.

v. 17, no. 2, May

Kaler, K. L., Another cetacean (whale) fossil from the Olympic Peninsula, p. 16-17.

Landes, Henry, The Washington State Geological Survey in 1909, p. 18-20.

LaSalata, F. V., Geotechnical aspects of the Centralia surface coal mine, Centralia, Washington, p. 9-11.

Lasmanis, Raymond, Hanford defense waste program and its geologic setting, p. 3-8.

Manson, C. J., The Division of Geology and Earth Resources library, p. 21-22.

v. 17, no. 3, August

Korosec, M. A.; Barnett, D. B., Geothermal resource exploration target area defined by Division drilling projects, p. 12-14.

Lasmanis, Raymond, Mineral industry in 1935—Predictions and reflections, p. 2, 14-15.

Lasmanis, Raymond, Knob Hill No. 2 shaft at the Republic Unit produces 2 millionth ounce of gold, p. 9-11.

Logan, R. L., Geologic hazard investigation near East Wenatchee, Washington, p. 3-6.

v. 17, no. 4, December

Schuster, J. E.; Repetski, J. E.; Carter, Claire; Dutro, J. T., Jr., Nature of the Metaline Formation—Ledbetter Formation contact and age of the Metaline Formation in the Clugston Creek area, Stevens County, Washington—A reinterpretation, p. 13-20.

Thorsen, G. W., Splitting and sagging mountains, p. 3-13.

1990

v. 18, no. 1, March

Joseph, N. L., Washington's mineral industry in 1989, p. 3-22.

Lasmanis, Raymond, Washington State mineral data files, Division of Geology and Earth Resources, p. 2, 23-24.

Schasse, H. W., Coal activity in Washington in 1989, p. 24-25.

Shipman, Hugh, Vertical land movement in coastal Washington, p. 26-33.

Walsh, T. J., Geologic history of the Tiger Mountain State Forest, p. 35-36.

v. 18, no. 2, May

Bethune, A. Y., George A. Bethune—First state geologist, p. 17.

Pringle, P. T., Mount St. Helens—A ten-year summary, p. 3-10.

Qamar, A. I., Earthquakes in Washington and Oregon 1980–1989—A decade of discovery, p. 12-14.

Shulene, J. A., Evidence of liquefaction in the Puyallup Valley, p. 15-16.

Schuster, J. E., How the Washington State “geological survey” got its start in 1890, p. 18-19

v. 18, no. 3, August

Erickson, Denis, Agricultural chemicals pilot study interim report, p. 8-11.

Palmer, S. P., Geotechnical analysis of liquefaction in Puyallup during the 1949 and 1965 Puget Sound earthquakes, p. 3-7.

Pringle, P. T., Seismicity at Mount St. Helens, 1989 to mid-1990, p. 22-23.

Schuster, J. E., The summer of 1890—Bethune in the field, p. 12-13.

■ WASHINGTON GEOLOGY ARTICLE INDEX ■

(Continued)

v. 18, no. 4, December

- INDEX ISSUE—Oct. 1988–Nov. 1990
Joseph, N. L., Industrial minerals in Washington—Production and potential, p. 8-16.
Lowell, S. M., The K M Mountain landslide near Skamokawa, p. 3-7.
Pringle, P. T., The Nisqually landslide of September 1990, p. 28-31.
Schuster, J. E., Early efforts of the Washington Mining Bureau, p. 17-20.
Washington Geologic Newsletter, Mineral resource land classification system [Growth Management Act of 1990]

WASHINGTON GEOLOGY

1991

v. 19, no. 1, March

- Joseph, N. L., Washington's mineral industry—1990, p. 3-24.
Logan, R. L.; Schuster, R. L., Lakes divided—The origin of Lake Crescent and Lake Sutherland, Clallam County, Washington, p. 38-42.
Miller, D. J., Damage in King County from the storm of January 9, 1990, p. 28-37.
Schasse, H. W., Coal activity in Washington during 1990, p. 26-27.
Schuster, J. E., Geologic work grinds to a halt—Politics and finances—1891–1893, p. 43-48.

v. 19, no. 2, June

- Landes, H. L.; Glover, S. L., Geologists, Seismicity in Washington—A 1925 perspective, p. 8-11.
Ludwin, R. S.; Qamar, A. I., 1882 earthquake rediscovered, p. 12-13.
Palmer, S. P., Modified Mercalli Intensity VI and greater earthquakes in Washington State, 1928–1990, p. 3-7.
Phillips, W. M., Geology of the Yacolt Burn State Forest, p. 17-23.
Schuster, J. E., Geological activities during the hiatus, 1892–1901, p. 25-27.

v. 19, no. 3, October

- Campbell, N. P.; Reidel, S. P., Geologic guide for State Routes 240 and 243 in south-central Washington, p. 3-17.
Pringle, P. T., Highlights of the Volcanic Ash and Aviation Safety Symposium, p. 25-29.
Wolfe, J. A.; Wehr, W. C., Significance of the Eocene fossil plants at Republic, Washington, p. 18-24.

v. 19, no. 4, December

- NORTHWEST PETROLEUM ASSOCIATION SYMPOSIUM ISSUE
England, T. D. J., Late Cretaceous to Paleogene structural and stratigraphic evolution of Georgia Basin, southwestern British Columbia—Implications for hydrocarbon potential, p. 10-11.

- Hurst, P. D., Petroleum geology of the Bellingham Basin, Washington, and evaluation of the AHEL and Partners Birch Bay No. 1 well, p. 16-18.

- Johnson, S. Y., Sedimentation and tectonic setting of the Chuckanut Formation, northwest Washington, p. 12-13.
Kenyon, Candace, Coalbed methane potential of Vancouver Island, British Columbia, p. 19-20.

- Lingley, W. S., Jr.; Norman, D. K., Surface mining and surface mining law in Washington, p. 38-48.

- Lingley, W. S., Jr.; von der Dick, Hans, Petroleum geochemistry of Washington—A summary, p. 23-27.

- Marcus, K. L., The rocks of Bulson Creek—Eocene through Oligocene sedimentation and tectonics in the Lake McMurray area, Washington, p. 14-15.

- Monger, J. W. H., Late Mesozoic to Recent evolution of the Georgia Strait–Puget Sound Region, British Columbia and Washington, p. 3-7.

- Mustard, P. S., Stratigraphy and sedimentology of the Georgia Basin, British Columbia and Washington State, p. 7-9.

- Nevin, A. E., Geothermal projects at Mount Meager, British Columbia—History, geology, power marketing, and implications for the U.S. Cascades, p. 34-37.

- Niem, A. R.; Snavely, P. D., Jr., Geology and preliminary hydrocarbon evaluation of the Tertiary Juan de Fuca Basin, Olympic Peninsula, northwest Washington, p. 27-34.

- Riding, Clay, Northwest Pipeline Corporation expands into the '90s, p. 18-19.

- Pappajohn, Steve, Coalbed methane potential of Whatcom and Skagit Counties, Washington, p. 20-23.

1992

v. 20, no. 1, March

- Bush, J. H.; Morton, J. A.; Seward, P. W., Depositional and stratigraphic interpretations of the Cambrian and Ordovician Metaline Formation, northeastern Washington, p. 27-35.

- Derkey, R. E.; Gulick, C. W., Washington's mineral industry—1991, p. 3-25.
Johnson, T. E.; Ludwin, R. S.; Qamar, A. I., The central Cascades earthquake of March 7, 1891, p. 36-38.

- Lasmanis, Raymond, A policy plan for improving earthquake safety in Washington—Fulfilling our responsibility, p. 39-40.

- Schasse, H. W., Coal activity in Washington—1991, p. 26.

- Schuster, J. E., History of cooperative topographic mapping in Washington, p. 41.

v. 20, no. 2, June

- Gulick, C. W., Building and decorative stone production in Washington, p. 3-11.
Mastin, L. G.; Myers, Bobbie, Shallow explosion-like seismicity and steam-and-ash emissions at Mount St. Helens—August 1989–June 1991, p. 12-18.

- Wehr, W. C.; Schorn, H. E., Current research on Eocene conifers at Republic, Washington, p. 20-23

v. 20, no. 3, September

- Lewis, S. E., Insects of the Klondike Mountain Formation, Republic, Washington, p. 15-19.
Morton, J. A., Re-evaluation of the geology and Zn-Pb ore deposits of the Metaline mining district, northeastern Washington, p. 3-14.
Norman, D. K.; Lingley, W. S., Jr., Reclamation of sand and gravel mines, p. 20-31.

v. 20, no. 4, December

- INDEX ISSUE, 1991–1992
Gerstel, W. J., Effects of Holocene and modern earthquakes in northern California, p. 10–15.

- Manson, C. J., The role of the Washington Division of Geology and Earth Resources Library—1990s and beyond, p. 16-18.

- Norman, D. K., Reclamation of quarries, p. 3-9.

1993

v. 21, no. 1, March

- Derkey, R. E.; Gulick, C. W.; Lingley, W. S., Jr., Washington's mineral industry—1992, p. 3-30.
Gibbons, S. T., National Natural Landmarks Program in the Pacific Northwest region, p. 38-40.

- Lewis, S. E.; Wehr, W. C., Fossil mayflies from Republic, Washington, p. 35-37.

- Schasse, H. W., Coal activity in Washington—1992, p. 31-32.

- Walsh, T. J., Proposed seismic zone changes in western Washington, p. 2, 40.

v. 21, no. 2, July

- Goetz, V. L., Radon potential of Washington from a geologic viewpoint, p. 11-14.

- Harris, C. F. T., The changing role of cartography in DGER—Plugging into the Geographic Information System, p. 15-16.

- Lasmanis, Raymond, Revised State Surface Mining Act—1993, p. 2.

- Pelto, M. S., Current behavior of glaciers in the North Cascades and effect on regional water supplies, p. 3-10.

■ WASHINGTON GEOLOGY ARTICLE INDEX ■

(Continued)

v. 21, no. 3, November

- Bleeck, J. A.; Sherar, R. L.; Gulick, C. W., The "geology" of papermaking, p. 3-8.
Dragovich, J. D.; Brunengo, M. J.; Gerstel, W. J., Landslide inventory and analysis of the Tilton Creek [River]-Mineral River [Creek] area, Lewis County, Washington; Part 1—Terrain and geologic factors, p. 9-18.

v. 21, no. 4, December

- Dragovich, J. D.; Brunengo, M. J.; Gerstel, W. J., Landslide inventory and analysis of the Tilton River-Mineral Creek area, Lewis County, Washington; Part 2—Soils, harvest age, and conclusions, p. 18-30.
Knoblauch, D. A., Washington's stone industry—A history, p. 3-17.

1994

v. 22, no. 1, March

- Derkey, R. E., Hot springs and ore deposition on the sea floor off the Washington coast, p. 24-28.
Derkey, R. E.; Gulick, C. W., Washington's mineral industry—1993, p. 3-22.
Dragovich, J. D.; Derkey, R. E., A late Triassic island-arc setting for the Holden volcanogenic massive sulfide deposit, North Cascades, Washington, p. 28-39.
Lewis, S. E., Fossil earwigs (Dermoptera) from the Klondike Mountain Formation (middle Eocene) of Republic, Washington, p. 39-40.
Schasse, H. W., Coal activity in Washington—1993, p. 23.

v. 22, no. 2, July

- GROWTH MANAGEMENT ISSUE
Brunengo, M. J., Geologic hazards and the Growth Management Act, p. 4-10.
Gerstel, W. J.; Brunengo, M. J., Mass wasting on the urban fringe, p. 11-17.
Gerstel, W. J.; Palmer, S. P., Geologic and geophysical mapping of the Spokane Aquifer—Relevance to growth management, p. 18-24.
Lasmanis, Raymond, Growth management in Washington State, p. 3.
Lingley, W. S., Jr.; Jazdzewski, S. P., Aspects of growth management planning for mineral resource lands, p. 36-45.
Manson, C. J., Contributions of the Division library to growth management planning, p. 45-46.
Pringle, P. T., Volcanic hazards in Washington—A growth management perspective, p. 25-33.
Walsh, T. J., Growth management planning for abandoned coal mines, p. 33-34.
Palmer, S. P., Revision to the 1994 Uniform Building Code seismic zone, map for Washington and Oregon, p. 35.

v. 22, no. 3, September

- Dragovich, J. D.; Pringle, P. T.; Walsh, T. J., Extent and geometry of the mid-Holocene Osceola Mudflow in the Puget Lowland—Implications for Holocene sedimentation and paleogeography, p. 3-26.
Schuster, J. E.; Bloomquist, R. G., Low-temperature geothermal resources of Washington, p. 43-45.
Thorsen, G. W., Earthquake preparedness—When you're not at home, p. 35-38.
Wehr, W. C.; Hopkins, D. Q., The Eocene orchards and gardens of Republic, Washington, p. 27-34.

v. 22, no. 4, December

- INDEX ISSUE, 1993-1994
Evans, S. H., Draining Seattle—WPA landslide stabilization projects, 1935-1941, p. 3-10.
Knoblauch, D. A., Guide to geologic, mineral, fossil, and mining history displays in Washington, p. 11-17.

1995

v. 23, no. 1, March

- Derkey, R. E., The metal mining industry of Washington in 1994, p. 3-17.
Derkey, R. E., A brief history of the Cannon mine, p. 21-23.
Gulick, C. W., The industrial mineral industry of Washington in 1994, p. 18-20.
Lasmanis, Raymond, History of the Metaline mining district and Pend Oreille mine, p. 24-29.
Norman, D. K.; Raforth, R. L., Cyanide heap leaching—The process, environmental problems, and regulation in Washington, p. 30-41.
Schasse, H. W., Washington's coal industry—1994, p. 43-44.

v. 23, no. 2, June

- Lingley, W. S., Jr., Preliminary observations on marine stratigraphic sequences, central and western Olympic Peninsula, Washington, p. 9-20.
Mustoe, G. E.; Gannaway, W. L., Palm fossils from northwest Washington, p. 21-26.
Palmer, S. P.; King, Michael; Gruenenfelder, C. R.; Miller, Stan; Hendron, Lars, Application of reflection seismology to the hydrogeology of the Spokane aquifer, p. 27-30.
Yamaguchi, D. K.; Pringle, P. T.; Lawrence, D. B., Field sketches of late-1840s eruptions of Mount St. Helens, Washington, p. 3-8.

v. 23, no. 3, September

- Wehr, W. C., Early Tertiary flowers, fruits, and seeds of Washington State and adjacent areas, p. 3-16.

v. 23, no. 4, December

- Christie, R. A., Selected Internet resources in the geosciences and related fields, with an emphasis on the Pacific Northwest, p. 15-17.
Logan, R. L.; Walsh, T. J., Evidence for a large prehistoric seismically induced landslide into Lake Sammamish, p. 3-5.
Hylland, Rebecca, Topographic map scales and the General Land Office Grid System, p. 11-12.
Staff, D. S. Johnston Cascades Volcano Observatory; Staff, Geophysics Program, University of Washington, Summary of recent Mount St. Helens seismic activity, p. 13-14.
Wehr, W. C.; Barksdale, L. L., Implications of middle Eocene feathers and crayfish from Republic, Washington, p. 6-10.

1996

v. 24, no. 1, March

- Boleneus, D. E.; Derkey, R. E., Geohydrology of Peone Prairie, Spokane County, Washington, p. 30-39.
Derkey, R. E., The metallic, nonmetallic, and industrial mineral industry of Washington in 1995, p. 3-19.
Mustoe, G. E.; Vandenburg, D. G.; Vandenburg, L. M., The minerals of Walker Valley, Skagit County, p. 22-29.
Schasse, H. W., Washington's coal industry—1995, p. 20-21.
Washington Geology, Extensive flood damage at Mount St. Helens, p. 21.

v. 24, no. 2, June

- REPUBLIC CENTENNIAL ISSUE
Burnham, R. J., Republic leaf deposits and Eocene ecology, p. 19.
Cheney, E. S.; Rasmussen, M. G., Regional geology of the Republic area, p. 3-7.
Gandolfo, Maria, The presence of Fagaceae (oak family) in sediments of the Klondike Mountain Formation (middle Eocene), Republic, Washington, p. 20-21.
Gaylord, D. R.; Suydam, J. D.; Price S. M.; Matthews, Jeffrey; Lindsey, K. A., Depositional history of the uppermost Sanpoil Volcanics and Klondike Mountain Formation in the Republic Basin, p. 15-18.
Johnson, K. R., The role of the Republic flora in documenting the floristic evolution of the northern hemisphere, p. 41-42.
Lasmanis, Raymond, A historical perspective on ore formation concepts, Republic Mining District, Ferry County, Washington, p. 8-14.
Leopold, E. B.; Updegrave, C. A.; Maier, Katie, Pollen and spores characteristic of Eocene sediments at Republic, Washington, p. 28.
Myers, J. A., Volcanic arcs and vegetation, p. 37-39.

■ WASHINGTON GEOLOGY ARTICLE INDEX ■

(Continued)

Perry, Madilane; Barksdale, Lisa, A brief history of the Stonerose Interpretive Center, p. 43-44.

Pigg, K. B.; Stockey, R. A., The significance of the Princeton Chert permineralized flora to the middle Eocene upland biota of the Okanogan Highlands, p. 32-36.

Schorn, H. E.; Wehr, W. C., The conifer flora from the Eocene uplands at Republic, Washington, p. 22-24.

Wehr, W. C.; Manchester, S. R., Paleobotanical significance of Eocene flowers, fruits, and seeds from Republic, Washington, p. 25-27.

Wehr, W. C.; Barksdale, L. L., A checklist of fossil insects from Republic, Washington, p. 29.

Wilson, M. V. H., The Eocene fishes of Republic, Washington, p. 30-31.

Wing, S. L.; DiMichele, W. A., The Republic Highlands, p. 40.

v. 24, no. 3, September

Barnes, L. G.; Goedert, J. L., Marine vertebrate paleontology on the Olympic Peninsula, p. 17-25.

Gerstel, W. J., The upside of the landslides of February 1996—Validating a stability analysis of the Capitol Campus bluffs, Olympia, Washington, p. 3-16.

v. 24, no. 4, December

INDEX ISSUE, 1995-1996

Evans, S. H.; Jensen, R. E., Geohydrologic review of the Cedar River ground-water basin, p. 3-13.

Mustoe, G. E., Hisingerite—A rare iron mineral from Walker Valley, Skagit County, Washington, p. 14-19.

1997

v. 25, no. 1, March

Derkey, R. E., From clay to bricks, p. 12-14.

Derkey, R. E., The metallic, nonmetallic, and industrial mineral industry of Washington in 1996, p. 3-11.

Gerstel, W. J.; Brunengo, M. J.; Lingley, W. S., Jr.; Logan, R. L.; Shipman, Hugh; Walsh, T. J., Puget Sound bluffs—The where, why, and when of landslides following the holiday 1996/97 storms, p. 17-31.

Schasse, H. W., Washington's coal industry—1996, p. 15-16.

v. 25, no. 2, June

CASCADIA TECTONICS ISSUE

Beck, M. E., Jr.; Burmester, R. F.; Furlong, P. O., Paleomagnetism of Miocene volcanic rocks near Mount Rainier and the paleomagnetic record of Cenozoic tectonism in the Washington Cascades, p. 8-14.

Cheney, E. S., What is the age and extent of the Cascade magmatic arc?, p. 28-32.

Dragovich, J. D.; Zollweg, J. E.; Qamar, A. I.; Norman, D. K., The Macaulay Creek thrust, the 1990 5.2-magnitude Deming earthquake, and Quaternary geologic anomalies in the Deming area, western Whatcom County, Washington—Cause and effects?, p. 15-27.

Finn, Carol; Stanley, W. D., Something old, something new, something borrowed, something blue—A new perspective on seismic hazards in Washington using aeromagnetic data, p. 3-7.

Norman, D. K., Outstanding surface mine reclamation honored, p. 33-36

Washington Geology, Geoscience information resources of Washington State, p. 36-39.

v. 25, no. 3, September

Lasmanis, Raymond, Ten-year direction for federal and state earth science, p. 2, 32.

Lasmanis, Raymond; Norman, D. K.; Cannon, Bart, Preliminary study of minerals in Tacoma smelter slags, p. 19-25.

Mustoe, G. E.; Gannaway, W. L., Paleogeography and paleontology of the early Tertiary Chuckanut Formation, northwest Washington, p. 3-18.

Washington Geology, Surface Mine Reclamation Awards, p. 26-27.

v. 25, no. 4, December

OLYMPIC PENINSULA ISSUE

Gerstel, W. J., Progress report on the geologic mapping and landslide inventory of the west-central portion of the Olympic Peninsula, Washington, p. 30-32.

Hopkins, D. J., Jr.; Johnson, K. R., First record of cycad leaves from the Eocene Republic flora, p. 37.

Lasmanis, Raymond, Update on the Crown Jewel Mine, p. 2.

McCrory, P. A., Evidence for Quaternary tectonism along the Washington coast, p. 14-20.

Orange, D. L.; Campbell, K. A., Modern and ancient cold seeps on the Pacific Coast—Monterey Bay, California, and offshore Oregon as modern-day analogs to the Hoh Accretionary Complex and Quinault Formation, Washington, p. 3-13.

Qamar, Anthony; Malone, S. D.; Ludwin, R. S., Rapid earthquake notification in the Pacific Northwest, p. 33-36.

Squires, R. L.; Goedert, J. L., Eocene megafossils from the Needles—Gray Wolf lithic assemblage of the eastern “core rocks”, Olympic Peninsula, Washington, p. 25-29.

Walsh, T. J.; Logan, R. L.; Neal, K. G., The Canyon River Fault, an active fault in the southern Olympic Range, Washington, p. 21-24.

Washington Geology, Museum specialists visit Republic's fossil site, p. 38-40.

Washington Geology, Trees ring in 1700 as year of huge Northwest earthquake, p. 40.

1998

v. 26, no. 1, April

Derkey, R. E., The metallic, nonmetallic, and industrial mineral industry of Washington—1997, p. 3-10.

Hammond, P. E., Tertiary andesitic lava-flow complexes (stratovolcanoes) in the southern Cascade Range of Washington, p. 20-30.

Lasmanis, Raymond, Food for a young mind, p. 2, 51.

McDonald, H. G., The sloth, the president, and the airport, p. 40-42.

Nesbit, E. A., Marine fauna of the middle Eocene Tukwila Formation, p. 13-19.

Pringle, P. T.; Schuster, R. L.; Logan, R. L., New radiocarbon ages of major landslides in the Cascade Range, Washington, p. 31-39.

Schasse, H. W., Washington's coal industry—1997, p. 11-12.

v. 26, no. 2/3, September

RECLAMATION ISSUE

Barton, B. R., Notes on the new Washington State fossil, *Mammuthus columbi*, p. 68-69.

Kaler, K. L., Early Miocene trace fossils from southwest Washington, p. 48-58.

Lasmanis, Raymond, Association of American State Geologists present results of STATEMAP Program, p. 2, 75.

Logan, R. L.; Schuster, R. L.; Pringle, P. T.; Walsh, T. J.; Palmer, S. P., Radiocarbon ages of probable coseismic features from the Olympic Peninsula and Lake Sammamish, Washington, p. 59-67.

Norman, D. K., Reclamation of flood-plain sand and gravel pits as off-channel salmon habitat, p. 21-28.

Norman, D. K., Surface Mine Reclamation Awards, p. 43-47.

Norman, D. K.; Cederholm, C. J.; Lingley, W. S., Jr., Flood plains, salmon habitat, and sand and gravel mining, p. 3-20.

Norman, D. K.; Raforth, R. L., Innovations and trends in reclamation of metal-mine tailings, p. 29-42.

Reed, K. M., Book review—Collecting the Natural World—Legal requirements and personal liability for collecting plants, animals, rocks, minerals, and fossils, p. 28.

Reed, K. M., Book review—West Coast Fossils—A guide to the ancient life, p. 42.

Washington Geology, Digital geologic maps available, p. 58.

Washington Geology, Errata from the previous issue, p. 69.

■ WASHINGTON GEOLOGY ARTICLE INDEX ■

(Continued)

v. 26, no. 4, December

- Lasmanis, Raymond, Crown Jewel Project and the Pend Oreille mine—Status report, p. 2.
Lasmanis, Raymond, DC-ROM review—The Photo-Atlas of Minerals—A comprehensive reference tool for mineral enthusiasts, students, teachers, and professional mineralogists, p. 9.
Mustoe, G. E., Stilpnomelane at Blanchard mountain, western Skagit County, Washington, p. 3-8.
Washington Geology, Washington State gem & mineral clubs, p. 10-11.

1999

v. 27, no. 1, July

INDEX ISSUE, 1997–1998

- Derkey, R. E., The metallic, nonmetallic, and industrial mineral industry of Washington in 1998, p. 3-8.
Knoblauch, D. A., The H. P. Scheel family—A history in stone, p. 18.
Lasmanis, Raymond, Geologic Hazards Program enhancements, p. 2.
Reed, K. M., Book review—Oregon Fossils, p. 22.
Reed, K. M., Exhibit review—Scary Fishes from Deep Time, p. 27, 28.
Schasse, H. W., Washington's coal industry—1998, p. 9.
Schuster, J. E., Book review—Ginkgo Petrified Forest, p. 8.

v. 27, no. 2/3/4, December

- Anderson, C. H.; Vining, M. R., Observations of glacial, geomorphic, biologic, and mineralogic developments in the crater of Mount St. Helens, Washington, p. 9-19.
Barton, B. R., Some notable finds of Columbian mammoths from Washington State, p. 23-27.
Crosby, C. J.; Carson, R. J., Geology of Steamboat Rock, Grand Coulee, Washington, p. 3-8.
Gerstel, W. J.; Reed, K. M., Earth Connections—Simple home experiments for bringing geology to life, p. 30-31.
Hughes, John, Do we really need another wake-up call?, p. 29.
Lasmanis, Raymond, Augite crystals from Doty Hills, Lewis County, Washington, p. 20-22.
Washington Geology, July 2, 1999, Satsop earthquake, p. 28.

2000

v. 28, no. 1/2, September

- Bird, Eric; Schwartz, Maurice, Shore platforms at Cape Flattery, Washington, p. 10-15.
Derkey, R. E.; Hamilton, M. M., The metallic, nonmetallic, and industrial mineral industry of Washington in 1999, p. 3-8.
Dragovich, J. D.; McKay, D. T.; Dethier, D. P.; Beget, J. E., Holocene Glacier Peak lahar deposits in the lower Skagit River valley, Washington, p. 19-21.
Driedger, C. L.; Samora, B. A., Surface elevation measurements on Nisqually Glacier, Mount Rainier, WA, 1931–1998, p. 24.
Frank, David, Hydrothermal indicators in streams and springs at Mount Rainier, p. 24.
Gerstel, W. J., Earth Connections—Hills, scales, and hiking trails, p. 30-31.
Hammond, P. E.; Brunstad, K. A.; Hooper, P. R.; Duncan, R. A.; Nelson B. K., Mowich Lake sill complex in northwest part of Mount Rainier National Park, Washington, p. 24.
Heine, J. T., Glacier advances near Mount Rainier at the last glacial/interglacial transition, p. 25.
Hill, R. L., Quake forecast shifts to land, p. 22-23.
Lasmanis, Raymond, Geologist Licensing Act, p. 2.
Le Guern, Francois; Lokey, W. M.; Schroedel, R. D., Mount Rainier summit caves volcanic activity, p. 25.
Lescinsky, D. T.; Sisson, T. W.; Fink, J. H., Lava and ice interaction at Mount Rainier, Washington, p. 25-26.
Mariner, R. H., Sulfate anomalies and loads of selected streams draining Mount Rainier, p. 26.
Moran, Seth; Malone, Steve, Seismicity studies at Mount Rainier, p. 26-27.
Murray, T. L.; Lockhart, A. B.; Wolfe, E. W.; Sharp, T. R.; Fielding, S. E., An automated lahar-detection system for the Carbon and Puyallup Rivers, WA, p. 27.
Nathenson, Manuel, Probabilities of Mount Rainier tephra eruptions, p. 27.
Norman, D. K., Washington's inactive and abandoned metal mine inventory and database, p. 16-18.
Nylen, T. H.; Fountain, A. G.; Driedger, C. L., Temporal and spatial variation of glaciers on Mount Rainier, p. 27-28.
Pringle, P. T., Book review: Geology of the North Cascades—A mountain mosaic, p. 35.
Pringle, P. T., Buried forests of Mount Rainier volcano—Evidence for extensive Holocene inundation by lahars in the White, Puyallup, Nisqually, and Cowlitz River valleys, p. 28.
Reed, K. M., Book review: The amber forest—A reconstruction of a vanished world, p. 42.
Reid, M. E.; Brien, D. L.; Sisson, T. W., 3-D edifice stability of Mount Rainier, WA, p. 28.
Schasse, H. W., Washington's coal industry, p. 9.
Serdar, Carol, Earth Connections—Virtual vacation, p. 32.
Sisson, T. W.; Lanphere, M. A., The geologic history of Mount Rainier volcano, Washington, p. 28.
Stockstill, K. R.; Vogel, T. A.; Patino, L. C.; Sisson, T. W., The Burroughs Mountain lava flow, Mount Rainier, WA, p. 28-29.
Vallance, J. W.; Donoghue, Susan, Holocene eruptive history of Mount Rainier, p. 29.
Washington Geology, Geographic/geologic names on the web, p. 51.
Washington Geology, Geological projects at Washington colleges and universities, p. 48-50.
Washington Geology, Geologist Registration Bill passes, p. 36-41.
Washington Geology, In memoriam: Carl R. McFarland, p. 43.
Washington Geology, National Park Service Ice Age Floods Study, p. 47.
Washington Geology, New National Natural Landmarks regulations, p. 46.
Washington Geology, Oil and gas lease auction, p. 42.
Washington Geology, Resources for educators, p. 33.
Washington Geology, Selected Internet resources in the geosciences and related fields, with an emphasis on Washington State, p. 44-45.
Watters, R. J.; Bowman, S. D.; Zimbelman, D. R.; Crowley, J. K., Significance of rock strength results and slope stability calculations to edifice and flank instability at Mount Rainier, p. 29.
Zimbelman, D. R.; Watters, R. J.; Crowley, J. K.; Rye, R. O., Non-uniform distribution of volcanic hazards, Mount Rainier, p. 29. ■

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